Comments Received on draft Ventura County MS4 Permit
December 27, 2006

From: Michelle Mehta, Project Attorney
Natural Resource Defense Council (NRDC)

To: RWQCB-LA

Date: March 6, 2007

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

March 6, 2007

Via FedEx and electronic mail

Executive Officer and Members of the Board
California Regional Water Quality Control Board, Los Angeles Region
320 W. 4th St., Suite 200
Los Angeles, CA 90013

Re: Draft Ventura County Municipal Separate Storm Sewer System Permit (NPDES Permit No. CAS004002)

Dear Mr. Bishop and Members of the Board:

The Natural Resources Defense Council ("NRDC") is a national environmental organization with over 600,000 members, more than 100,000 of whom are California residents and approximately 2,700 of whom live in Ventura County. NRDC, along with Heal the Bay and Environment California, have reviewed the Draft Ventura County Municipal Separate Storm Sewer System Permit ("Draft Permit" or "Proposed Permit"), the third iteration of the co-permittees' Phase I municipal stormwater permit under the Clean Water Act's National Pollution Discharge Elimination System. NRDC, Heal the Bay, and Environment California submit the following comments to the Draft Permit.

We strongly support many aspects of the Draft Permit, and submit the following comments to underscore in particular the importance of specific provisions included in the Planning and Land Development Program that substantially improve the previous permit's program.[1] This letter further urges the Board to make certain targeted amendments to the Draft Permit's language to ensure that it meets the Clean Water Act's maximum extent practicable standard ("MEP") for municipal dischargers and most effectively addresses Ventura County's water quality problems. Finally, this letter also addresses and supports the importance of making modifications to the Permit's water quality standards provisions, TMDL implementation provisions, and monitoring program, all of which are currently deficient.

In particular, our comments focus on the Draft Permit's low impact development ("LID") requirements in the development planning program (Section 4.E). Low impact development uses a collection of site design and treatment controls to maintain the natural hydrologic character of developed sites, and has been demonstrated to be the most effective and cost-efficient method for managing storm water and protecting the environment.[2] The LID framework for new and redevelopment in the Draft Permit is a solid foundation for the Permit's Planning and Land Development Program.

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But if the Permit is to meet the goal of "implement[ing] a timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water to the MEP and achieve water quality objectives for . . . the County of Ventura," stronger provisions are necessary.[3] Therefore, we urge the Board to adopt language reflecting effective standards and a rapid phase-in of low impact development requirements for new and redevelopment projects, as well as lowering the threshold for applicability of LID and other post-construction best management practices to new and redevelopment projects. As discussed in this submittal, such an approach not only has numerous benefits with respect to a variety of water quality and supply objectives, but is necessary to meet MEP standard for municipal storm water runoff treatment and control. Moreover, NRDC has included in this comment package a special study focused on Ventura County by Dr. Richard Horner, one of the nation's leading storm water experts. This Study proves the technical feasibility of the Permit's LID provisions, as strengthened by our comments, and shows that they can be implemented feasibly in the full-range of development types, ranging from single family housing through large commercial establishments.

1. Water quality problems persist in Ventura County receiving waters.

Notwithstanding the past permit's programs, runoff volume, and erosion control,[4] significant water quality problems persist in Ventura County. Indeed, in 2006,

> [e]levated pollutant concentrations were observed at all monitoring sites during one or more monitored wet weather storm events, and at [specific sites] during one or more dry weather events.[5]

Not only has research showed that storm water runoff is a significant source of pollutants found in Southern California, but the State Water Resources Control Board has determined that "[m]unicipal point source discharges from urbanized areas remain a *leading cause* of impairment of surface waters in California."[6] And impairments to the beneficial uses of water bodies in the Ventura watersheds include many of the pollutants of concern identified by the Ventura Countywide Storm Water Monitoring Program.[7]

In light of the persistent water quality problems in Ventura County, the Board should use the opportunity presented by reissuance to modify the permit's structure and requirements to better achieve the underlying goals of meeting water quality objectives and protecting the beneficial uses receiving waters in Ventura County in a "timely, comprehensive, and cost-effective manner"[8] It appears that staff's proposal makes positive strides in this direction and that, with targeted but essential modifications, the Permit can meet the MEP standard and begin to measurably reduce water pollution.

2. Specific aspects of the 2000 permit likely contributed to the failure to see adequate water quality improvements over the past permit cycle.

The provisions of the previous permit included the designation of certain categories of development as requiring storm water quality mitigation conditioning under a SQUIMP.[9] Evidence indicating that water quality problems persist makes it clear that the steps taken in the previous permit[10] are failing to keep up with the increasing impacts of development in Ventura County. The following discussion highlights two specific aspects of the previous permit that likely contributed to the failure of the previous permit's SQUIMP program to achieve broad improvements in stormwater runoff: the thresholds at which stormwater control is triggered for various types of new development; and the insufficient emphasis on low impact development-based ("LID") best management practices ("BMPs").[11]

A. The existing thresholds for storm water mitigation appear to be arbitrary in light of persistent water quality problems.

It is apparent that the existing permit's thresholds for storm water mitigation conditioning in development projects were inadequate to meet water quality objectives.[12] As described above, water quality data for Ventura County indicates that the previous permit's BMP requirements for development projects have not affected the urban landscape at an acceptable pace. This reality, and the current performance of municipalities throughout the nation, supports the Draft Permits lowering of the thresholds for specific development project categories to 5,000 square feet.[13]

Indeed, the seemingly arbitrary nature of at least some of the existing threshold levels is further underscored by the observation that thresholds for some of the development categories used in the SQUIMP prepared under the previous permit are objectively large.[14] For instance, the threshold for commercial developments in the previous permit was 100,000 square feet.[15] To put this figure in perspective, 100,000 square feet is equivalent to 2.3 acres—larger than two football fields together—which is a very large development in any setting but represents an enormous development in the urban context. So-called big-box retail stores such as Home Depot, Target, and large grocery stores are typically 50,000 sq ft or more; these massive developments often would fall below the commercial priority project threshold under the existing permit, while it would take a "supercenter" type development to trigger the 100,000 square feet threshold in the commercial category.[16] Given the documented water quality challenges that remain and the centrality of the planning and development program's storm water mitigation requirements to achieving beneficial improvement, it is clear that substantially lower and more comprehensive thresholds are necessary. Thus the Draft Permit's language setting thresholds for post-construction BMP requirements at 5,000 square feet for Commercial, Restaurant, Retail Gasoline Outlets, etc. development categories is soundly supported.

B. Language in the previous permit was inadequate to ensure sufficient implementation of low impact development BMPs ("LID").

Although the previous permit contained no specific requirement for the use of LID-based BMPs in new development and redevelopment projects, the Stormwater Quality Urban Impact Mitigation Plan directed that certain site layout concepts reflecting LID principles be implemented in all categories of development. But even though the SQUIMP recognized these methods as a critical tool in reducing pollutant loading and runoff volume from developed areas, its provisions lacked clear, enforceable standards. For instance, the SQUIMP directed copermittees to require project proponents to conserve natural areas "if applicable" and to design development sites "to minimize, to the maximum extent practicable, the introduction of pollutants of concern" to the MS4. Though it is generally consistent with LID principles, such language does not provide project proponents and copermittees with clear standards—necessary both to promote implementation and to enable enforcement. For instance, this open-ended language fails to give guidance on how the copermittees should determine whether site design concepts that would conserve natural areas are applicable, and does not establish clear guidelines for what level of site-design BMP implementation constitutes the maximum extent practicable minimization of pollutant generation.[17]

Ultimately, while the previous permit allowed the copermittees' SQUIMP to make strides toward laying the foundation for LID practices including site design and other source control methods in Ventura County, its language left too much latitude to project proponents and permitting authorities to actually achieve widespread use of low impact site design strategies in new development. By contrast, the Draft Permit includes specific numeric requirements to limit effective impervious area, maintain natural hydrology, and treat site runoff. These provisions are critical to the success of the new permit in reducing pollutant loading and storm water runoff rate and volume, and we fully support their inclusion, with certain modifications, proposed below. In addition, as discussed below, we urge the Board to strengthen the Draft Permit's LID requirements to ensure the timely and robust implementation of these methods, which are widely recognized as the most effective tool to decrease storm water runoff volume and pollutant loading.

3. To meet the Clean Water Act's MEP requirement, the Permit must include up-to-date, comprehensive LID requirements for new development and redevelopment.

The Clean Water Act requires municipal discharges to reduce storm water pollution to the maximum extent practicable ("MEP"), a standard that continually evolves and improves as better and better technologies become available and are demonstrated to be effective.[18] As noted in the Draft Permit, the MEP standard requires municipalities to "evaluate what is effective and make improvements" to best management practices in their MS4 permits in each successive permit iteration in order to meet water quality objectives."[19] It is widely recognized[20]—and the Regional Board and staff have repeatedly emphasized[21]—that urban development increases impervious land cover and exacerbates problems of storm water volume, rate, and pollutant loading. Development and redevelopment activities that occur without effective post-

construction BMPs contribute to these problems. We strongly support the Draft Permit's inclusion of a catch-all provision to the development planning program, the effect of which is to condition development projects disturbing one acre or more of land upon inclusion of storm water controls. The inclusion of catch-all categories for storm water quality mitigation conditioning in other MS4 permits demonstrates that this aspect of the permit is feasible and practicable, and therefore necessary to meet MEP. (See examples below). But in addition to Ventura County's persistent water quality problems, more-inclusive programs in comparable communities and the Phase II MS4 requirements indicate that the proposed catch-all provision for development projects is under-inclusive and must be amended in the reissued Permit.

For instance, states, counties, and cities across the nation have adopted requirements to address runoff from development projects that are more inclusive and stringent than the Proposed Permit would mandate:

- City of Santa Monica, California - defines "new development," to which specific storm water runoff control requirements apply, as "any construction project that (a) results in improvements to fifty percent or greater of the square footage of a building, (b) creates or adds at least five thousand square feet of impervious surfaces, or (c) creates or adds fifty percent or more of impervious surfaces." (Santa Monica Municipal Code, Chapter 7.10.030(d)(3));

- Contra Costa County, California – applies storm water runoff control requirements to "new and redevelopment projects that create 10,000 square feet or more of impervious area." (RWQCB, San Francisco Bay Region, Contra Costa Countywide NPDES Municipal Stormwater Permit Amendment Order No. R2-2003-0022 (amending Order No. 989-058, NPDES Permit No. CAS0029912) at pp. 9-10 (lowering previous one-acre threshold for the application of performance standards effective August 15, 2006);

- State of New Jersey - defines "major development," to which specific storm water runoff control requirements apply, as "any development that ultimately provides for disturbing one or more acres of land or increasing impervious surface by one-quarter acre or more." (New Jersey Stormwater Rules, N.J.A.C. § 7:8-1.2);

- State of Washington – applies numeric storm water treatment requirements to any project adding 5,000 square feet or more of new impervious surface. (Phase I Municipal Stormwater NPDES General Permit (Draft Feb. 15, 2006) Appendix I (Minimum Technical Requirements for New Development and Redevelopment), at pp. 7, 8, 20);

- State of Maryland – requires storm water management plans for any development that disturbs 5,000 square feet or greater. (Maryland Code, Title 26, Subtitle 17, Chapter 2, §5B; see also Maryland Model Stormwater Management Ordinance (July 2000) at pp. 2, 5, 8);

- City of Portland, Oregon – employs "a citywide pollution reduction requirement for all development projects with over 500 square feet of impervious development footprint area, and all existing sites that propose to create new off-site stormwater discharges." (Stormwater Management Manual (adopted July 1, 1999; updated September 1, 2004) Chapter 1.5.2 (Pollution Reduction Requirements) at p.1-25);

- Stafford County, Virginia – uses an exemption approach under which low impact development practices apply to all development except a) mining/oil & gas operations; b) agriculture; c) *linear development projects that are less than 1-acre, insignificant increases in peak flow, and no flooding or downstream erosion problems*; d) single family not part of a subdivision; e) structure ancillary to single-family homes; and e) "land development projects that disturb less than two thousand five hundred (2,500) square feet of land." (Stafford County Muni. Code § 25.5-1(f).)

These examples illustrate that applying specific storm water mitigation requirements to all development and redevelopment projects that disturb greater than 5,000 square feet is practicable. Indeed, they show that an appropriate new development threshold for SUSMP purposes is 5,000 square feet or less for all development, no matter its characterization as a restaurant, housing development, or other category.

Moreover, the Draft Permit's one-acre threshold for new development projects' storm water control conditioning is only as inclusive as the EPA threshold for *Phase II* MS4s.[22] That the Draft Permit's catch-all threshold is no more progressive than the Phase II requirements is significant because the Phase I Permits and rules have been issued for nearly 15 years now, while Phase II Permits are first generation permits throughout the nation. Indeed, in promulgating Phase II rules EPA gave "maximum flexibility" to smaller cities since they were obtaining permits for the first time.[23] This comparison makes it impossible to justify a one-acre threshold in the Ventura County permit.

Not only does 5,000 square feet represent the appropriate threshold for the catch-all category under the MEP standard; it would further the purpose of low impact development ("LID") practices, i.e. expressly to ensure that when historically-open-space areas in Ventura County undergo urbanization, the opportunity to mitigate the adverse impacts of storm water pollution from urbanization is not lost.[24] (We have included "redline" edits to the Draft Permit that effectuate this and other comments in this letter, attached hereto as Attachment III). The new permit's catch-all provision for new development is of critical importance in ensuring comprehensive storm water control. For as the Draft Permit's findings indicate, "[d]evelopment and urbanization increase pollutant loads, volume, and discharge velocity," and significant adverse impacts to the biological and physical integrity of receiving waters can be observed as a result of the conversion of as little as three percent of natural cover to impervious surfaces.[25]

In light of the rapid pace of development in Ventura County, the persistent storm water pollution problems County's receiving waters, comparison to the Phase II MS4 requirements,

and to reflect consistency with thresholds used in other regions and states, it is apparent that a 5,000 square feet threshold applicable to all types and categories of development is consistent with the MEP standard. Such a standard, therefore, must be included in the Draft Permit.

4. LID practices have significant benefits over conventional BMPs.

LID practices, including site design, source control, and soil-based treatment control techniques are often more effective than many types of conventional structural treatment BMPs for protecting water quality. By preventing site runoff altogether, source control practices can often eliminate the necessity of addressing sources of pollution, rather than attempting to remove a percentage of the pollution after it has entered stormwater runoff.[26] In fact, LID practices offer myriad benefits—including both the primary benefits of pollution reduction and reducing storm water runoff volume and rate, as well as secondary benefits such as greater cost-effectiveness, groundwater recharge, and habitat protection—over conventional BMPs. NRDC's report on storm water management strategies, *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* (2006), comprehensively addresses both the primary and secondary benefits of LID practices and is included with these comments as Attachment II.

Moreover, NRDC commissioned a formal study and report by a leading, nationally-recognized expert, Dr. Richard Horner, entitled *Investigation of the Feasibility and Benefits of Low-Impact Site Design Practices ("LID") for Ventura County* (2007) (attached hereto as Attachment I and referred to herein as the "Horner Ventura County Study"). Dr. Horner confirms that the benefits of LID would be substantial in Ventura County and that these benefits can, in fact, be obtained given local building patterns. The Report verifies that implementing LID practices would make the Permit more consistent with MEP and is necessary to meet water quality objectives. It also specifically demonstrates that the Permit's LID requirements, as modified as described below to be more protective of water quality, are feasible and practicable in the full-range of development types and approaches typical in Southern California.

A. The primary benefits of low impact development practices are proven and effective.

In the context of the NPDES municipal storm water permit for Ventura County, the primary benefits of LID techniques are reducing runoff volume, rate, and pollution load—results that have been studied and documented in dozens of reports, case studies, and pilot projects in California and across the nation.[27] These primary benefits are described in great detail in the materials that accompany this letter, including reports by state and federal government agencies, building industry organizations, scientists, and non-governmental organizations.[28] Indeed, many of the reference materials suggested in the copermittees' 2000 SQUIMP address low impact development.[29] For instance, the copermittees' SQUIMP recommends *Start at the Source* (Bay Area Stormwater Management Agencies Association, 1999), as a guide for the selection of BMPs for development planning.[30] This document discusses the application of LID strategies in various development contexts, noting that LID practices "are a collection of *proven* methods and

techniques that integrates stormwater management into planning and design, that reduces overall runoff, and manages stormwater as a resource."[31] The overwhelming body of literature shows that LID strategies are effective and can be cost-saving in both the short and long-term.

B. Implementing low impact development practices for storm water runoff control has significant secondary benefits.

In addition to helping reduce pollutant loading in storm water and reducing the volume and rate of storm water runoff, LID practices offer other economic, aesthetic, and practical benefits to developers, municipalities, and homeowners in addition to benefiting natural ecosystems by conserving natural resources such as soil, water, and vegetation and restoring natural hydrologic processes in the watersheds. The following summary of the secondary benefits of LID practices is but an overview of the voluminous information in the resources provided in Attachment V. (See Attachment IV, providing a table of contents to the materials in Attachment V).

Groundwater recharge – Groundwater supplies in Ventura County, which represent most of its non-imported freshwater, are pressured by overdrafting.[32] Maintaining abundant groundwater supplies is important because these aquifers not only provide drinking water but also help maintain base flow essential to the biological and habitat integrity of streams.[33]

As Ventura County becomes more developed, a much larger percentage of rainwater hits impervious surfaces including streets, sidewalks, and parking lots rather than infiltrating into the ground. By using LID techniques that reduce the amount of impervious surfaces and increase vegetation and soil features, the landscape can retain more of its natural hydrological function.[34] Thus, LID practices have the added benefit of recharging groundwater aquifers and preserving baseflow to streams and wetlands.[35]

Improving groundwater supplies in Southern California would also save money now spent on imported water, and "may be the key to continued development in the area."[36] As the Board Members are no doubt well aware, Southern California faces serious water supply challenges.[37] Ventura County already imports most of its water.[38] But continued, rapid growth puts increasing pressure on the local water resources, including water supply. The traditional storm water management regime, with its infrastructure emphasis on collection and conveyance, simply wastes a valuable resource.

For instance, the Metropolitan Water District of Southern California ("MWD"), which supplies the Ventura County, charges $331 to $427 per acre-foot for untreated water, and $478 to $574 per acre-foot for treated water.[39] On average, the wholesale cost of untreated water is $379 per acre-foot and treated water is $526 per acre-foot. Table 1 shows the economic value of water retained by LID practices across six typical development types (which are further described in Attachment I). As the Horner Ventura County Study proved, LID practices have the ability to capture 100% of storm water runoff in many typical development types. Captured water can recharge the water supply or be otherwise reused; in both scenarios, LID's runoff prevention

creates a significant economic benefit that represents substantial cost savings, as further shown in Table 1.

Table 1. Post-Development Water Saving Comparisons[40, a]

	MFR	Sm-SFR	REST	OFF	Lg-SFR	COMM
Annual post-development water recharged from site with basic treatment BMPs	4.39-7.99	1.88-2.62	0.45-0.65	1.76-2.10	82.0-114	0.80-3.03
Annual post-development water recharged and harvested from site with LID	13.4	3.72	0.95	2.60	162.0	6.37
Annual water saved through LID per site	5.41-9.01	1.10-1.84	0.30-0.50	0.50-0.84	48.0-80.0	3.34-5.57
Value of annual LID water savings per site (untreated water)	$2,050-$3,415	$417-$697	$114-$190	$190-$318	$18,192-$30,320	$1,266-$2,111
Value of annual LID water savings per site (treated water)	$2,846-$4,739	$579-$968	$158-$263	$263-$442	$25,248-$42,080	$1,757-$2,930

[a] Figures given in acre-feet
[b] MFR (156-unit multi-family residential complex); Sm-SFR (23-unit single-family residential development); REST (3220-sq ft restaurant); OFF (7500-sq ft office building); Lg-SFR (1000-unit single-family residential development); COMM (2-acre commercial development)

Minimize infrastructure requirements – Low impact development practices can also reduce conventional stormwater drainage infrastructure, such as pipes, gutters, and detention basins, thereby reducing infrastructure costs.[41] Traditional curbs, gutters, storm drain inlets, piping and detention basins can cost two to three times more than engineered grass swales and other low impact development techniques to handle stormwater runoff from roadways.[42] Clustering homes can reduce infrastructure costs to the builder, since fewer feet of pipe, cable, and pavement are needed, and maintenance costs are reduced for homeowners.[43] "Studies in Maryland and Illinois show that new residential developments using green infrastructure stormwater controls saved $3,500 to $4,500 per lot (quarter- to half-acre lots) when compared to new developments with conventional stormwater controls."[44]

Low impact development can also minimize the need for irrigation systems.[45] This can be crucial in a hot, dry climate, where as much as 60 percent of the municipal water demand can be attributed to irrigation.[46] LID techniques can even improve air quality by filtering air pollution and helps to counteract urban heat island effect by lowering surface temperatures.[47]

Increased parkland and wildlife habitat, preserving natural features and natural processes – LID strategies include vegetative and grassy swales, tree-box filters, and preserved vegetation, thereby increasing the amount of green spaces in a community.[48] These strategies can also protect regional trees and flora and fauna.[49] Thus, LID measures result in less disturbance of the development area and conservation of natural features.[50] In fact, harvesting rainwater for use in gardens, rather than allowing stormwater runoff into storm drains, can even result in "bigger, healthier plants" because rainwater is better for plants than chlorinated tap water.[51]

Using LID techniques, development can be reconfigured in a more eco-efficient and community-oriented style.[52] Clustering homes on slightly smaller lot areas can allow more preserved open space to be used for recreation, visual aesthetics, and wildlife habitat.[53] Builders

in many areas have been able to charge a premium price for "view lots" facing undisturbed natural vistas, or pond areas that also function as bioretention cells.[54]

Enhanced property values – In addition to the aesthetic appeal of more parkland and vegetation, "greening" a neighborhood can often increase property values.[55] "Visitors stroll down Seattle's 'SEA [Street Edge Alternatives] Streets' project marveling at the beautiful landscaping while residents in adjacent blocks continually ask the city when their street will be redesigned to be a 'SEA Street.'[56] The NOAA Coastal Services Center reports that the Trust for Public Lands and National Park Service provide many examples of communities whose property values increased due to their proximity to open space. For example, a cluster development in New York that preserved 97 acres of natural wooded environment is benefiting from its open space. One developer commented, "It may not be the woods that bring (buyers) to us initially, but it seems to make all the difference when they see what it's like."[57]

Cheaper development costs – LID not only raises property values for owners, but it can result in more cost savings for developers as well.[58] Using LID can reduce land clearing and grading costs, potentially reduce impact fees and increase lot yield, and increase lot and community marketability.[59] Among other industry organizations, the National Association of Home Builders recognizes LID's economic and environmental desirability:

> Ever wish you could simultaneously lower your site infrastructure costs, protect the environment, and increase your project's marketability? Using Low Impact Development (LID) techniques you can. LID is an ecologically friendly approach to site development and storm water management that aims to mitigate development impacts to land, water, and air. The approach emphasizes the integration of site design and planning techniques that conserve natural systems and hydrologic functions on a site.[60]

For example, the Gap Creek residential subdivision in Sherwood, Arkansas used LID methods instead of conventional methods. The results were 17 additional lots, $3000 more per lot than the competition, $4800 less cost per lot, 23.5 acres of green spaces and parks, and ultimately, over $2.2 million in additional profit.[61]

5. The new Permit should ensure full implementation of the most effective storm water management strategies by setting clear, enforceable low impact development requirements.

The need for better storm water management remains. Indeed, urban runoff continues to be a leading cause of water quality impairment in California and Ventura County.[62] NRDC recognizes and applauds aspects of the Draft Permit that represent significant improvements over the past permit—especially its strong emphasis of LID practices. In particular, we note that the addition of a catch-all category for post-construction BMP-conditioned development projects, the inclusion of a maximum level of effective impervious area for development projects, and

lower thresholds for specific categories of development (e.g. commercial) mark a substantial improvement in the development planning portion of the permit. But more is needed if the Permit is to meet the MEP standard and effectively reduce water pollution and its impacts. As discussed previously, studies show that impacts to receiving waters result when any natural areas are converted to impervious surface. And a voluminous body of literature shows that LID is effective, practicable and available—and therefore represents the MEP standard. In light of this overwhelming evidence, and given the scope of the storm water challenge that still confronts Ventura County, we urge the Board to adopt the Draft Permit with the following specific amendments in order to more timely attain water quality objectives and meet the MEP standard.

As noted throughout the following discussion of our proposed amendments, these changes have precedent in analogous permits, codes and programs currently in effect in other municipalities in California as well as states and municipalities across the country. Moreover, Dr. Horner's report (at Attachment I) demonstrates that the amendments proposed by NRDC are both necessary and practical in Ventura County. This report specifically shows, based on detailed analysis, that the Permit's LID provisions can be implemented feasibly in a full-range of development types, ranging from single family housing through large commercial establishments, consistent with existing sit layouts and designs.

A. Lower the "catch-all" category threshold for post-construction storm water mitigation requirements from one acre to 5000 square feet to achieve broader implementation of low impact site design BMPs and other source control and treatment BMPs. This "catch-all" category would cover all development types, whether already listed in the post-construction storm water BMP program or not, but would not supersede lower thresholds that already apply to some of the development categories such as parking lots. NRDC's edits to the language in the Proposed Permit would require a development to implement post-construction treatment controls and BMPs to mitigate storm pollution if it met (1) the development type and sizing criteria in existing categories in the Draft Permit or, if it did not meet one or both criteria, (2) if it took place on or disturbed more than 5,000 square feet, no matter its type. As discussed above in section 3, this threshold is in place in other jurisdictions around the nation.

B. Lower the maximum allowable Effective Impervious Area in new development and redevelopment projects from five to three percent to more fully control storm water runoff at its source. As the Draft Permit's findings acknowledge, the scientific literature demonstrates that significant adverse impacts to the physical habitat and biological integrity of receiving waters occurs with the conversion of as little as three percent of natural areas to impervious surfaces.[63] Other west coast studies show a direct correlation between the creation of new impervious surface and impacts to receiving waters at *all* levels.[64] In light of the well-documented connection between impervious surface quantity and receiving water quality, the Draft Permit's setting the maximum EIA for new development and redevelopment projects at five percent all but endorses biological and chemical degradation. This simply cannot be justified, and we doubt that the Draft permit intends to create this result. Furthermore, as Dr. Horner discusses in his Ventura County-specific report, a three-percent standard is feasible and practicable in typical developments for a full range of land uses in Ventura County.

C. Require that pervious areas be engineered (e.g. soil amendment) to handle runoff from impervious areas so that runoff from impervious areas does not increase over its natural levels as a result of receiving runoff from Not Directly-Connected Impervious Areas (NCIAs). This important requirement may in fact be covered in the Draft Permit's hydromodification section (Part 4.E.II.1(a)),[65] but the current language in the development planning section is unclear. We urge the Board to clarify this requirement with respect to the maximum EIA requirement to avoid the result that runoff from impervious areas exceeds the capacity of a site's available pervious areas to effectively retain, filter, or infiltrate that runoff.

D. Emphasize a full range of low-impact development source reduction techniques such as soil amendment, water harvesting, and infiltration trenches in describing available methods of disconnecting Effective Impervious Areas to reduce runoff. As Dr. Horner's report demonstrates, LID-based source reduction techniques are both commonplace and effective, especially when implemented in conjunction with dispersion through vegetated areas.[66] The Draft Permit currently advances a powerful source reduction concept by noting that EIA can be rendered "ineffective" by draining impervious areas to vegetated swales. The omission of other effective and efficient LID source reduction tools that can be used to reduce the amount of EIA in a given development project appears to be an oversight, and we urge the Board to amend the permit to explicitly refer to a broad range of LID methods that complement and provide additional ways to meet the cap on allowable EIA.

E. Set numeric treatment criteria for post-construction BMPs for development projects greater than 50 acres. In light of evidence demonstrating the adverse impacts of urbanization—specifically, of the creation of impervious surface—we strongly support the Draft Permit's inclusion of separate, specific provisions for ultra-large development projects.[67] However, it is important that in addition to designing project-specific hydrodynamic models, such projects be required to comply with the same volumetric treatment control and hydrodynamic treatment control standards that apply to all other development.

F. Shorten the timeline for copermittees to develop guidelines for LID to three months. The Draft Permit allots 18 months to the development of a LID Technical Guidance Manual that would include specifications for a range of site design strategies. The region's persistent water quality problems demand that full LID implementation be undertaken in development planning as quickly as possible. In light of the copermittees' apparent familiarity with LID concepts[68] and the abundance of available reference materials on LID practices (including technical manuals and guidance documents), an 18-month period for developing LID guidelines cannot be justified. Not only is three months ample time to complete a LID technical manual, it better reflects the maximum practicable effort required by the MEP standard and is more consistent with the Board's stated goal of addressing water quality problems as quickly and efficiently as possible.[69]

6. The Draft Permit's monitoring program must be adequate to determine compliance with the Permit's requirements.

A fundamental aspect of the Clean Water Act is the requirement that a permittee undertake a self-monitoring program sufficient to determine compliance with its NPDES permit. (See 40 C.F.R. § 122.44(i)(1) (stating that every NPDES permit shall require the permit holder to monitor the mass and volume of each limited pollutant "*to assure compliance with permit limitations*") (emphasis added); 40 C.F.R. § 122.41(a) ("The permittee must comply with all conditions of [its] permit."); 40 C.F.R. § 122.41(j) (requiring that a permittee's monitoring records contain both the techniques it employed, and the results of its monitoring analysis).) The Act further requires each permittee to report to the issuing agency on its compliance with the permit as determined from the monitoring program. (See *Sierra Club v. Union Oil Co. of California* (N.D. Cal. 1988) 716 F.Supp. 429, 434-35; 33 U.S.C. § 1318.)[70] "Unless a permit holder monitors as required by the permit, it will be difficult if not impossible for state and federal officials charged with enforcement of the Clean Water Act to know whether or not the permit holder is discharging effluents in excess of the permit's maximum levels." (*Sierra Club v. Simkins Industries, Inc.* (4th Cir. 1988) 847 F.2d 1109, 1115.)

This principle holds true in other, similar contexts as well. For example, section 504(a) of the Clean Air Act requires that each permit "shall include enforceable emission limitations and standards . . . and such other conditions as are necessary to assure compliance with applicable requirements." (*Natural Resources Defense Council, Inc. v. U.S.E.P.A.* (D.C. Cir. 1999), 194 F.3d 130, 133 (quoting 42 U.S.C. § 7661c(a)).) And in *Natural Resources Defense Council, Inc. v. Texaco Refining & Marketing, Inc.* (D. Del. 1998) 20 F.Supp.2d 700, the court required Texaco to undertake an extensive monitoring program in order to adequately assess the nature and impact of any noncomplying pollutant discharges from its facility.

Here, however, the monitoring program in the Draft Permit is inadequate to achieve these objectives because the monitoring program does not require measures that will allow permittees, the Regional Board, or other stakeholders to determine whether the MS4 is in fact causing or contributing to violations of water quality standards.

At the heart of the Draft Permit are the prohibitions in Parts 1 and 2:

- "Discharges into and from the MS4 in a manner causing or contributing to a condition of pollution, contamination or nuisance (as defined in Cal. Water Code § 13050), in waters of the State are prohibited." (Part I.A.1);
- "Discharges from the MS4, which cause or contribute to exceedences of receiving water quality objectives for surface waters are prohibited." (Part I.A.2);
- "Discharges from the MS4 that cause or contribute to a violation of water quality standards are prohibited." (Part 2);

Yet the monitoring program is inadequate to actually make any of these determinations. First, the Mass Emissions monitoring in the Draft Permit is inadequate. The Permit requires the Principal Permittee to monitor mass emissions from 5 stations. (Draft Permit at p. F-2). However, the Ventura County's website states that, "The Mass Emission drainage areas are much larger than the drainage areas associated with Receiving Water sites, and include other sources of discharge, such as wastewater treatment plants, non-point sources, and groundwater discharges."[71] Thus, monitoring mass emissions sites cannot achieve the goals required by the Permit because, as the permittee admits, these sites include other sources of discharge. So it will be unknown whether exceedences are being "contributed" to by the MS4, or whether they are from wastewater treatment plants, non-point sources, or groundwater discharges, for example.

The Draft Permit also requires receiving water monitoring in the form of tributary monitoring. (Draft Permit at p. F-7). Again, Ventura County's website states that, "Receiving water monitoring is designed to characterize the quality of receiving waters rather than discharges to the receiving waters."[72] Exceedences of water quality standards found in receiving waters might be caused from a variety of sources. Thus, this type of monitoring is also inadequate to determine whether discharges from the MS4 are causing or contributing to water quality violations.

Indeed, the Ventura County's 2005-2006 annual monitoring report reflects these inadequacies. Despite recognizing that the Permit requires them to "determine whether discharges from their municipal separate storm sewer system are causing or contributing to an exceedence of water quality standards,"[73] nowhere is such a determination actually made. Instead, the County states that "neither USEPA nor the State has established procedures for making this type of determination."[74] Rather, the County "conducted a preliminary assessment of receiving water and discharge monitoring data to identify potential water quality issues."[75] In fact, the 2005-2006 annual report recognizes water quality exceedences of, among other constituents: e.coli, fecal coliform, mercury, aluminum, nickel, TSS, and pesticides. Yet the report never actually answers this question of whether the MS4 is "causing or contributing" to exceedences of water quality standards as required by the current permit and by federal law.

To make the type of determination required by the Permit, one would need (1) end-of-pipe testing results to determine what pollution is coming from the MS4; and (2) a way to link those end-of-pipe results to a discharge from the MS4. Further, a method would need to be in place to determine which co-permittees are responsible for water quality violations.[76] As currently written, however, the Draft Permit's monitoring program is wholly inadequate to achieve these objectives and therefore is contrary to federal requirements.

7. Municipal action levels are useful as interpretations of the MEP standard but referencing them in the receiving waters section of the Permit impermissibly "mixes apples and oranges."

NRDC supports staff's important effort to quantify in a more transparent manner the federal minimum Maximum Extent Practicable standard ("MEP"). (33 U.S.C. §

1342(p)(3)(B)(iii).) The so-called "MAL" approach, however, should not be referenced in Part II of the Draft Permit, its "Receiving Water Limitations." As staff knows, MEP is a technology-based standard, while receiving water limits express a requirement to maintain an empirical condition measured in the water sufficient to meet adopted water quality standards. They are separate and essential permit terms. While, as discussed below, MEP may be sufficient to meet water quality standards, this is not always the case, and MEP is not expressed in terms of water quality outcome, but rather a level of discharger effort based on available technologies. The current reference to MALs in the Section II may be misinterpreted to mean that MALs are numeric water quality-based effluent limits—and they clearly are not WQBELs.

Technology-based requirements are effluent limitations based on specified levels of technology for the reduction of water pollution. (33 U.S.C. § 1311(b)(1)(A); *Communities for a Better Environment v. State Water Resources Control Bd.* (2005) 132 Cal.App.4th 1313, 1320.) The technology-based standard applicable to municipal stormwater dischargers requires controls for stormwater to the "maximum extent practicable," or "MEP." (33 U.S.C. § 1342(p)(3)(B)(iii).) With respect to dry weather discharges from the storm drain system, referred to as non-stormwater discharges, the statutory requirement is to "effectively prohibit" all such discharges. (*Id.* § 1342(p)(3)(B)(ii).)

The federal maximum extent practicable standard is not defined in the Clean Water Act, and, thus, the Regional Water Board and the State Water Board, as the lead expert agencies, have appropriately described the standard. (See *Building Industry Ass'n of San Diego County v. State Water Resources Control Board* (2004) 124 Cal.App.4th 866, 889.) The MEP standard consists of choosing solutions and treatment technologies based on a number of broad factors. MEP focuses "mostly on technical feasibility, but cost is also a relevant factor." (*In the Matter of the Petitions of the Cities of Bellflower et al.* (Oct. 5, 2000) State Water Board Order WQ 2000-11.) Other factors are effectiveness, regulatory compliance, and public acceptance. (*BIA, supra,* 124 Cal.App.4th at p. 876, fn. 7; Elizabeth Jennings, Senior Staff Counsel, State Water Board, *Definition of "Maximum Extent Practicable"* (Feb. 11, 1993).) By setting MALs, the Regional Board is interpreting MEP, a technology-based standard; it is not setting a numeric water quality-based effluent limit.

By contrast, in the Clean Water Act, Congress supplemented technology-based effluent limitations with "water quality-based" limitations "so that numerous point sources, despite individual compliance with effluent limitations, may be further regulated to prevent water quality from falling below acceptable levels." (*City of Burbank v. State Water Resources Control Bd.* (2005) 35 Cal.4th 613, 620.) In many instances, compliance with technology-based limits will produce sufficient pollution reduction to meet water quality standards, without any more stringent regulation. (See, e.g., 40 C.F.R. § 130.7(b)(1)(i)-(iii) (noting that additional controls are necessary when "technology-based" limitations are not adequate).) But where technology-based standards do not provide, or are not expected to provide, sufficient pollution reduction for local water quality, given its actual or desired use, water quality-based standards are imposed. (See *Burbank, supra,* 35 Cal.4th at p. 620.)

Water quality standards are empirical measures of the "permissible amounts of pollutants allowed in a defined water segment" and are expressed as either numeric effluent limits for specific pollutants in accordance with CWA section 303 (e.g., "x-milligrams of pollutant per y per liter of effluent") or as narrative conditions (e.g., "prohibition of toxic conditions in receiving waters. Hence, water quality standards serve as the basis of effluent limitations intended to assure that a water body remains healthy.

Four recent Court of Appeal cases in California have addressed the relationship between technology-based standards and water quality-based limitations in municipal storm water permits. (*BIA, supra*, 124 Cal.App.4th 866; *City of Arcadia v. State Water Resources Control Board* (2006) 135 Cal.App.4th 1392; *City of Rancho Cucamonga v. Regional Water Quality Control Bd.—Santa Ana Region* (2006) 135 Cal.App.4th 1377.) These decisions came about through a series of challenges to stormwater permits (except in the instance of *Arcadia,* as discussed below) which focused on the interpretation of CWA section 402(p)(3)(B), added as part of the 1987 CWA amendments.

In *Building Industry Ass'n of San Diego County v. State Water Resources Control Board* (2004) 124 Cal.App.4th 866, review denied Mar. 30, 2005, the court held that the "such other provisions" clause of section 402(p)(3)(B)(iii) invests EPA or Regional Water Boards with discretion to impose permit limitations necessary to meet water quality standards—even if the limits require pollution reductions greater than the technology-based MEP standard mandates. (*BIA, supra,* 124 Cal.App.4th at p. 884.) Thus, EPA or Water Boards can issue storm water permits requiring even *strict* compliance with water quality standards regardless of whether that imposes obligations on dischargers in excess of those associated with the federal MEP standard. (*Id.* at p. 871.)

On the heels of *BIA*, the Court of Appeal for the Fourth District issued two more decisions that also deal directly or indirectly with municipal storm water permits in Southern California—*City of Arcadia* and *City of Rancho Cucamonga. Rancho Cucamonga* found that a municipal storm water permit did not exceed the MEP standard, but that under *BIA*, the water boards had the authority "to impose municipal storm sewer control measures more stringent than a federal standard known as 'maximum extent practicable.'" (*Rancho Cucamonga, supra,* 135 Cal.App.4th at pp. 1388-89 (citing *BIA, supra,* 124 Cal.App.4th at p. 871).) The court in *Arcadia* agreed. (*Arcadia, supra,* 135 Cal.App.4th at p. 1429; see also *Defenders of Wildlife v. Browner* (1999) 191 F.3d 1159, 1166-67 ("EPA has the authority to determine that ensuring strict compliance with state water-quality standards is necessary to control pollutants. . . . [T]he EPA's choice to include either management practices or numeric limitations in the permits was within its discretion.").)

For these reasons, referring to MEP, or MALs, in a section of the Draft Permit that mandates that action be taken sufficient to meet water quality standards is erroneous and conflates separate, distinct requirements, which both must be reflected clearly in the Draft Permit, in light of decisional authority including the State Water Resources Control Board's

decision in the BIA matter. (*In the Matter of the Petition of Building Industry Ass'n et al.*(2001) State Water Board Order WQ 2001-15.)

8. Numeric waste load allocations and consistent numeric effluent limitations must be utilized to assure compliance with adopted TMDLs.

We strongly object to the inclusion of language in the Draft Permit that purports to express a WLA as "a suite of BMPs that have been determined as providing a reasonable expectation that WLAs will be achieved for wet weather flows . . . ." (Draft Permit at pp. 31, 88). We further object to the fact that WLAs that describe daily limits to meet established TMDLs have not been included.

By law, WLAs, or waste load allocations, are numeric components of a TMDL. (33 U.S.C. § 1313(d) (describing TMDLs as a "load").) As an initial matter, the Draft Permit does not contain or refer to any WLA, *per se*; instead it refers to concentration-based effluent limit with no description of how this limit acts as an effective "load" limitation. (Draft Permit at pp. 88-94). As an initial matter, this violates the law. Indeed, EPA has stated that:

> WLAs and LAs are to be expressed in numeric form in the TMDL. (See 40 C.F.R. § 130.2(h) & (i).) EPA expects TMDL authorities to make separate allocations to NPDES- regulated storm water discharges (in the form of WLAs) and unregulated storm water (in the form of LAs).[77]

Moreover, the Draft Permit does not make the concentration-based WLA that is listed for each applicable TMDL a compliance requirement in wet weather. There is no legal basis in the Clean Water Act that allows effluent limits designed to meet a TMDL to be expressed in narrative terms, i.e., as non-specified BMPs. Indeed, it is elementary that a TMDL is a *number* and that its component parts must, therefore, also be numbers, since totaled, they must by law equal the TMDL. If effluent limits purportedly implementing a TMDL are not numbers less than or equal to the WLA they purport to implement, then they do not in any meaningful way serve as water-quality based effluent limits derived to meet the TMDL. The omission of such limits illegal.[78]

Rather than provide statutory or regulatory support for its approach, the Draft Permit simply refers to the EPA Permitting Guidance document (Draft Permit at p. 20) as the totality of the legal support for not having numeric limits in the Draft Permit so as to meet the WLA. But even this document requires, as prerequisites to the inclusion of non-numeric effluent limits, a set of conditions that the Draft Permit does not come close to meeting.

First, the Draft Permit does not comply with the stipulation that "when a non-numeric water quality-based effluent limit is imposed, the permit's administrative record, including the

fact sheet when one is required, needs to support that the BMPs are expected to be sufficient to implement the WLA in the TMDL.[79]

Second, the Draft Permit does not comply with the further requirement that "[t]he NPDES permit must also specify the monitoring necessary to determine compliance with effluent limitations. (See 40 C.F.R. § 122.44(i).) Where effluent limits are specified as BMPs, the permit should also specify the monitoring necessary to assess if the expected load reductions attributed to BMP implementation are achieved (e.g., BMP performance data)." (*Id.*)

Third, the Draft Permit does not comply with the requirement to "make separate aggregate allocations to NPDES-regulated storm water discharges (in the form of WLAs) and unregulated storm water (in the form of LAs)."[80]

In addition, the Draft Permit does not impose or daily limits or translate the TMDL into daily limits in the Draft Permit. This is illegal. (*Friends of the Earth, Inc. v. EPA, et al.* No. 05-5015 (D.C. Cir. 2006)).

For all of these reasons, the Draft Permit must be revised to assure that the permit implements available TMDLs in an adequate and lawful fashion.

We thank the Board Members and Board Staff for this opportunity to comment on the Draft Permit, and for your continued commitment to protecting the water resources in Ventura County.

Sincerely,

David S. Beckman, Senior Attorney
Dorothée A. Alsentzer, Legal Fellow

ENDNOTES

[1] Los Angeles Regional Water Quality Control Board, *Draft Ventura County Municipal Separate Storm Sewer System Permit*, NPDES No. CAS004002 (Dec. 27, 2007), Part 4.E (hereinafter "Draft Permit").

[2] See e.g., California Water & Land Use Partnership, *Low Impact Development: A Sensible Approach to Land Development and Stormwater Management*, available at http://www.oehha.ca.gov/ecotox/pdf/lid071106.pdf, last accessed February 17, 2007; R. Horner, *Investigation of the Feasibility and Benefits of Low-Impact Site Design Practices ("LID") for Ventura County* (February 2007) (attached hereto as Attachment I) (hereinafter "Horner Report"); see also LID reference documents attached hereto as Attachment V and Table of Contents to those materials, attached hereto as Attachment IV.

[3] Draft Permit at p. 36.

[4] See Ventura Countywide Stormwater Quality Management Program, Annual Report for Permit Year 6, Reporting Year 12 (October 2006) at p. 10-4 (hereinafter "2005-06 Annual Report"), available at http://www.vcstormwater.org/publications.html#publications_2006annualreport.

[5] 2005-06 Annual Report at p. 9-3 (emphasis added).

[6] Draft Permit at p. 2 (emphasis added).

[7] See Draft Permit at p.2.

[8] Draft Permit at p. 36; see also Draft Permit at p. 20 (noting that MS4 programs are to "be implemented in an iterative manner and improved with each iteration by using information and experience gained during the previous permit term. . . . with the purpose of attaining water quality objectives and standards") (citing EPA, 61 Fed. Reg. 43,761 (Aug. 26, 1996); 61 Fed. Reg. 41,697); California Regional Water Quality Control Board, Los Angeles Region, Resolution No. 2005-002 (Jan. 27, 2005) ("In addition to the process outlined in this [hydromodification policy] resolution, the Regional Board has and will continue to strongly support restoration efforts in and along the Region's urbanized, highly modified water courses. The Regional Board also strongly supports preservation efforts geared toward ensuring long-term protection for the Region's remaining natural water courses.").

[9] Ventura County Storm Water NPDES Permit, Board Order No. 00-108, NPDES Permit No. CAS004002 (Aug. 3, 2000) at p. 16 (hereinafter "Order No. 00-108").

[10] Ventura County Storm Water NPDES Permit, Board Order No. 00-108, NPDES Permit No. CAS004002 (Aug. 3, 2000) at p. 16 (hereinafter "Order No. 00-108").

[11] Requirements relating to the new development and redevelopment components of the copermittees' development planning programs are addressed in sections 3 and 4.C, and 3 and 4.E, of the previous permit and Draft Permit, respectively.

[12] See 2005-06 Annual Report at p. 9-3 ("Elevated pollutant concentrations were observed at all monitoring sites during one or more monitored wet weather storm events, and at [specific monitoring sites] during one or more dry weather events.")

[13] See Draft Permit at p. 55.

[14] *Natural Resources Defense Council v. Costle* (D.C. Cir. 1977) 568 F.2d 1369, 1371.

[15] Order No. 00-108 at p. 16.

[16] While the parking lots associated with such large retail stores would likely trigger post-construction BMPs based, a project falling under more than one category would require additional source controls for each category. The added benefit of additional source controls is lost when the commercial threshold is not triggered.

[17] SQUIMP at p. A-5.

[18] See 33 U.S.C. § 1342(p)(3)(B)(iii).

[19] Draft Permit at p. 20 (citing EPA, *Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits*, 61 Fed. Reg. 43,761).

[20] See e.g., Michael Mallin, *Wading in Waste*, SCIENTIFIC AMERICAN, June 2006, at pp. 54-56; NRDC, *Stormwater Strategies: Community Responses to Runoff Pollution* (1999); NRDC, *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* (2006) at pp. 2.2-2.5 (hereinafter "Rooftops to Rivers") (attached hereto as Attachment II); U.S. EPA *Preliminary Data Summary of Urban Storm Water Best Management Strategies* (Aug. 1999) at p. 85.

[21] See e.g., Draft Permit at p. 3 (finding that "[d]evelopment and urbanization increase pollutant loads, volume, and discharge velocity) and pp. 4-5 (finding that "[s]tudies have demonstrated a direct correlation between the degree of imperviousness of an area and the degradation of its receiving waters. Significant declines in the biological integrity and physical habitat of streams and other receiving waters have been found to occur with as little as 3-10 percent conversion from natural to impervious surfaces.").

[22] 40 C.F.R. § 122.34(b)(5)(i) (Phase II municipalities "must develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre").

[23] 64 Fed. Reg at 68,739.

[24] "[D]uring the 2000 permit term, the conversion of agricultural lands and open space to other 'developed' land uses has been ongoing and will continue." ROWD at p. 3-30.

[25] Draft Permit at pp. 3-4.

[26] See Horner Report, Tables 7-10; San Diego Municipal Stormwater Copermittees, Report of Waste Discharge (Aug. 2005) at p. 43.

[27] See e.g., State Water Resources Control Board, "Low Impact Development – Sustainable Storm Water Management," (Jan. 2005) ("LID is a sustainable practice that *benefits water supply and contributes to water quality protection*. . . . LID has been a *proven approach* in other parts of the country") (emphasis added).

[28] See Attachments IV, V (Table of Contents and Collection of LID reference materials).

[29] See Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan for the Ventura County Flood Control District, the County of Ventura, and the Cities of Ventura County (July 27, 2000) (Hereinafter "SQUIMP") (citing *inter alia*, Bay Area Stormwater Management Agencies Association ("BASMAA"), *Start at the Source* (1999)).

[30] See SQUIMP at p. 6, Table 2.

[31] BASMAA, *Start at the Source* (1999) at p. 26 (emphasis added).

[32] California Regional Water Quality Control Board, Los Angeles Region, *Water Quality Control Plan Los Angeles Region (Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (1994) at p. 1-19, 1-21 (hereinafter, "Basin Plan").

[33] Prince George's County, Maryland, Dept. of Environmental Resources, *Low Impact Development Hydrologic Analysis* (July 1999), at p. 4, at http://www.epa.gov/owow /nps/lid_hydr.pdf, last accessed June 20, 2006; Devinny, J. Kamieniecki, S., Stenstrom, M., *Alternative Approaches to Stormwater Quality Control* (June 2004) at p. 42 (University of Southern California and University of California at Los Angeles study prepared for the Los Angeles Regional Water Quality Control Board).

[34] PATH, Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*, at http://www.toolbase.org/techinv/techDetails.aspx?technologyID=223, last accessed June 20, 2006; EPA, *Low Impact Development Hydrologic Analysis* (July 1999), at p. 4.

[35] PATH Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*, at 1; State of Massachusetts, *Smart Growth Toolkit*, at

http://www.mass.gov/envir/smart_growth_toolkit /pages/mod-lid.html, last accessed June 20, 2006.

[36] Devinny, J., *et al.*, *Alternative Approaches to Stormwater Quality Control* (June 2004) at p. 42.

[37] See Gary Polakovic, *Water Quest Shifts Course*, L.A. TIMES, June 11, 2006, at B.1.

[38] *Basin Plan* at p. 1-18.

[39] See Metropolitan Water District of Southern California, Water Rates and Charges, at http://www.mwdh2o.com/mwdh2o/pages/finance/finance_03.html, last accessed February 17, 2007.

[40] Table 1 adapted from R. Horner, *Investigation of the Feasibility and Benefits of Low-Impact Site Design Practices ("LID") for Ventura County* (Feb. 2007).

[41] Puget Sound Online: Puget Sound Action Team, *Benefits of Low Impact Development*, at http://www.psat.wa.gov/Programs/LID/LID_benefits.htm, last accessed June 20, 2006; Dept. of Defense, *United Facilities Criteria: Low Impact Development* (Oct. 2004), at p. 3.

[42] Dept. of Defense, *United Facilities Criteria: Low Impact Development* (Oct. 2004), at p. 5.

[43] *See* PATH Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*; U.S. EPA, *Preliminary Data Summary of Urban Storm Water Best Management Practices* (Aug. 1999) at pp. 6-25-27; BASMAA, *Start at the Source* (1999) at p. 80.

[44] NRDC, *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* (April 2006) at 4.12 (attached hereto as Attachment II); see also Puget Sound Online: Puget Sound Action Team, *Benefits of Low Impact Development* ("A developer in Maryland saved 30 percent in construction costs by using LID practices rather than conventional mitigation methods. AHBL Engineering of Tacoma conducted a study that showed that a conventional residential development could have been designed at significant cost savings if LID techniques had been used rather than conventional ones."), at http://www.psat.wa.gov/Programs/LID/LID_benefits.htm, last accessed June 19, 2006.

[45] PATH Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*.

[46] Texas Water Development Board, *The Texas Manual on Rainwater Harvesting* (3d ed. 2005), at p. 36, at http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf, last accessed June 19, 2006.

[47] NRDC, *Rooftops to Rivers*, at 3.10.

[48] NEMO California Partnership, *Low Impact Development (LID)*, at http://ca-walup.usc.edu/LID_Factsheet.pdf, last accessed June 20, 2006.

[49] NAHB Research Center, *Builder's Guide to Low Impact Development*, at http://www.toolbase.org/docs/MainNav/GreenBuilding/3832_Builder-final-screen.pdf, last accessed June 20, 2006.

[50] EPA, *Low Impact Development: A Literature Review* (Oct. 2002) at p. 2, at http://www.epa.gov/nps/lid.pdf, last accessed June 20, 2006.

[51] Sam Williams, *Harvesting the Rain*, GOTHAM GAZETTE, May 2006 ("It's a win-win for the environment and for gardeners."), at http://www.gothamgazette.com/article/environment/20060531/7/1871.

[52] EPA, *Low Impact Development: A Literature Review* (Oct. 2002) at p. 3.

[53] PATH Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*; NRDC, Rooftops to Rivers, at 3.10 ("Green infrastructure also improves urban aesthetics, has been shown to increase property values, and provides wildlife habitat and recreational space for urban residents.").

[54] PATH Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*.

[55] See, e.g., PATH Technology Inventory, *Low Impact Development (LID) Practices for Storm Water Management*; Devinny, J., *et al.*, *Alternative Approaches to Stormwater Quality Control* (June 2004) at p. 43; BASMAA, *Start at the Source* (1999) at p. 80.

[56] Puget Sound Online: Puget Sound Action Team, *Benefits of Low Impact Development.*

[57] NOAA Coastal Services Center, at http://www.csc.noaa.gov/alternatives/ openSpace.html, last accessed June 20, 2006.

[58] See e.g., BASMAA, *Start at the Source* (1999) at p. 80; see generally Attachments IV, V.

[59] National Association of Home Builders Research Center, *Builder's Guide to Low Impact Development*, at http://www.toolbase.org/PDF/DesignGuides/Builder_LID.pdf, last accessed February 28, 2007.

[60] National Association of Home Builders Research Center (March 2003) at http://www.toolbase.org/Home-Building-Topics/Land-Use/low-impact-development-guides, last accessed Feb. 28, 2007.

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[61] NEMO California Partnership, *Low Impact Development (LID)* at http://www.coastal.ca.gov/nps/lid-factsheet.pdf, last accessed Feb. 28, 2007.

[62] See Draft Permit at p. 2.

[63] See Draft Permit at pp. 4-5.

[64] See Horner Report at Attachment I (describing various studies documenting observable impacts to biological integrity of receiving waters with any conversion from natural to impervious surfaces).

[65] See Draft Permit at pp. 52-53.

[66] See Horner Report at pp. 15-16.

[67] See Draft Permit at p. 56.

[68] See SQUIMP at pp. A5-A6, Tables 1, 2.

[69] See Draft Permit at p. 36 ("This Order and the provisions herein, are intended to develop, achieve, and implement a *timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water to the MEP and achieve water quality objectives for the permitted areas in the County of Ventura.").*

[70] Also, federal regulations require that large and medium municipal MS4s submit, in their permit application, a "discharge characterization." (40 C.F.R. § 122.26(d)(1)(iv).) Among other things, the discharge characterization must give "[e]xisting quantitative data describing the volume and quality of discharges from the municipal storm sewer…". (*Id.*) In order to obtain this information, a permittee needs an adequate monitoring program in place.

[71] Ventura Countywide Stormwater Quality Management Program, Monitoring Program—NPDES Water Quality, at http://www.vcstormwater.org/programs_monitor_npdes_waterquality.html, last accessed March 6, 2007.

[72] Ventura Countywide Stormwater Quality Management Program, Monitoring Program—NPDES Water Quality, at http://www.vcstormwater.org/programs_monitor_npdes_waterquality.html, last accessed March 6, 2007.

[73] Ventura Countywide Stormwater Quality Management Program, 2005-2006 Annual Report, at p. 93 (Oct. 2006), at http://www.vcstormwater.org/documents/workproducts/2006annualreport/Annual_Report_2005-2006.pdf, last accessed March 6, 2007.

[74] *Id.*

[75] *Id.*

[76] Federal regulations state that, "Co-permittees need only comply with permit conditions relating to discharges from the municipal separate storm sewers for which they are operators." (40 C.F.R. § 122.26 (a)(3)(vi).) Thus, unless the monitoring program enables the permittees to determine which storm system is causing or contributing to water quality violations, a situation may arise where no one would be held responsible.

[77] EPA, "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs," at 2 (2002) ("EPA Permitting Guidance").

[78] *See* EPA Permitting Guidance at 2 (citing 40 C.F.R. § 122.44(d)(1)(vii)(B)) ("NPDES permit conditions must be consistent with the assumptions and requirements of available WLAs.").

[79] EPA Permitting Guidance at 2 (citing 40 C.F.R. §§ 124.8, 124.9 & 124.18).

[80] EPA Permitting Guidance at 3-4.

INVESTIGATION OF THE FEASIBILITY AND BENEFITS OF LOW-IMPACT SITE DESIGN PRACTICES ("LID") FOR VENTURA COUNTY

Richard R. Horner†

ABSTRACT

The Clean Water Act NPDES permit that regulates municipal separate storm sewer systems (MS4s) in Ventura County, California will be reissued in 2007. The draft permit includes provisions for requiring the use of low impact development practices (LID) for certain kinds of development and redevelopment projects. Using six representative development project case studies, the author investigated the practicability and relative benefits of the permit's LID requirements. The results showed that (1) LID site design and source control techniques are more effective than conventional best management practices (BMPs) in reducing runoff rates; (2) Effective Impervious Area (EIA) can practicably be capped at three percent, a standard more protective than that proposed in the draft permit; and (3) in five out of six case studies, LID methods would reduce site runoff volume and pollutant loading to zero in typical rainfall scenarios.

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INTRODUCTION

The Assessment in Relation to Municipal Permit Conditions

This purpose of this study is to investigate the relative water quality and water reuse benefits of three levels of storm water treatment best management practices (BMPs): (1) basic "treat-and-release" BMPs (e.g., drain inlet filters, CDS units), (2) commonly used BMPs that expose runoff to soils and vegetation (extended-detention basins and biofiltration swales and filter strips), and (3) low-impact development (LID) practices. The factors considered in the investigation are runoff volume, pollutant loading, and the availability of water for infiltration or other reuse. In order to assess the differential impact of storm water reduction approaches on these factors, this study examines six case studies typical of development covered by the Ventura County Municipal Separate Storm Sewer System Permit.

Low-impact development methods reduce storm runoff and its contaminants by decreasing their generation at sources, infiltrating into the soil or evaporating storm flows before they can enter surface receiving waters, and treating flow remaining on the surface through contact with vegetation and soil, or a combination of these strategies. Soil-based LID practices often use soil enhancements such as compost, and thus improve upon the performance of more traditional basins and biofilters. For the study's purposes, verification of the practicability and utility of LID practices was based on a modified version of the Planning and Land Development Program (Part 4, section E) in the Draft Ventura County Municipal Separate Storm Sewer System Permit ("Draft Permit"). The Draft Permit requires that Effective Impervious Area (EIA) of certain types of new development and redevelopment projects be limited to five percent of

total development project area. EIA is defined as hardened surface hydrologically connected via sheet flow or a discrete hardened conveyance to a drainage system or receiving water body. (Draft Permit p. 50) The study modified this requirement to three percent, as a way to test both the feasibility of meeting the higher, five percent standard in the draft permit and because as the lower, three percent EIA is essential to protect the Ventura County aquatic environment (see Attachment A).

The Draft Permit further requires minimizing the overall percentage of impervious surfaces in new development and redevelopment projects to support storm water infiltration. The Draft Permit also directs an integrated approach to minimizing and mitigating storm water pollution, using a suite of strategies including source control, LID, and treatment control BMPs. (Draft Permit p. 50) It is noted in this section of the document that impervious surfaces can be rendered "ineffective" if runoff is dispersed through properly designed vegetated swales. In testing the practicability of the draft permit's requirements and a three percent EIA standard, this study broadened this approach to encompass not only vegetated swales (channels for conveyance at some depth and velocity) but also vegetated filter strips (surfaces for conveyance in thin sheet flow) and bioretention areas (shallow basins with a range of vegetation types in which runoff infiltrates through soil either to groundwater or a subdrain for eventual surface discharge). The Draft Permit's stipulation of "properly designed" facilities was interpreted to entail, among other requirements, either determination that existing site soils can support runoff reduction through infiltration or that soils will be amended using accepted LID techniques to attain this objective. Finally, the study further broadened implementation options to include water harvesting (collection and storage for use in, for example, irrigation or gray water systems), roof downspout infiltration trenches, and porous pavements.

The Draft permit was interpreted to require management of EIA, other impervious area (what might be termed Not-Connected Impervious Area, NCIA), and pervious areas as follows:

- Runoff from EIA is subject to treatment control and the Draft Permit's Hydromodification Mitigation Control requirements before discharge.

- NCIA must be drained onto a properly designed vegetated surface or its runoff managed by one of the other options discussed in the preceding paragraph. To the extent NCIA runoff is not eliminated prior to discharge from the site in one of these ways, it is subject to treatment control and the Draft Permit's Hydromodification Mitigation Control requirements before discharge.

- Runoff from pervious areas is subject to treatment control and the Draft Permit's Hydromodification Mitigation Control requirements before discharge. This provision applies to pervious areas that both do and do not receive drainage from NCIA.

Where treatment control BMPs are required to manage runoff from the site, the Draft Permit's Volumetric or Hydrodynamic (Flow Based) Treatment Control design bases were assumed to apply. The former basis applies to storage-type BMPs, like ponds, and requires capturing and treating either the runoff volume from the 85th percentile 24-hour rainfall event for the location, the volume of annual runoff to achieve 80 percent or more volume treatment, or the volume of runoff produced from a 0.75 inch storm event. The calculations in this analysis used the 0.75-inch quantity. The Hydrodynamic basis applies to flow-through BMPs, like swales, and requires treating the runoff flow rate produced from a rain event equal to at least 0.2 inches per hour intensity (or one of two other approximately equivalent options).

Scope of the Assessment

With respect to each of the six development case studies, three assessments were undertaken: a baseline scenario incorporating no storm water management controls; a second scenario employing conventional BMPs; and a third development scenario employing LID storm water management strategies.

To establish a baseline for each case study, annual storm water runoff volumes were estimated, as well as concentrations and mass loadings of four pollutants: (1) total suspended solids (TSS), (2) total recoverable copper (TCu), (3) total recoverable zinc (TZn), and (4) total phosphorus (TP). These baseline estimates were based on the anticipated land use and cover with no storm water management efforts.

Two sets of calculations were then conducted using the parameters defined for the six case studies.

The first group of calculations estimated the extent to which basic BMPs reduce runoff volumes and pollutant concentrations and loadings, and what impact, if any, such BMPs have on recharge rates or water retention on-site.

The second group of calculations estimated the extent to which commonly used soil-based BMPs and LID site design strategies ameliorate runoff volumes and pollutant concentrations and loadings, and the effect such techniques have on recharge rates. When evaluating LID strategies, it was presumed that EIA would be limited to three percent and runoff from EIA, NCIA, and pervious areas would be managed as indicated above. The assessment of basins, biofiltration, and low-impact design practices analyzed the expected infiltration capacity of the case study sites. It also considered related LID techniques and practices, such as source reduction strategies, that could work in concert with infiltration to serve the goals of: (1) preventing increase in annual runoff volume from the pre- to the post-developed state, (2) preventing increase in annual pollutant mass loadings between the two development states, and (3) avoiding exceedances of California Toxics Rule (CTR) acute saltwater criteria for copper and zinc.

The results of this analysis show that:

- Developments implementing no post-construction BMPs result in storm water runoff volume and pollutant loading that are substantially increased, and recharge rates that are substantially decreased, compared to pre-development conditions.

- Developments implementing basic post-construction treatment BMPs achieve reduced pollutant loading compared to developments with no BMPs, but storm water runoff volume and recharge rates are similar to developments with no BMPs.

- Developments implementing traditional basins and biofilters, and even more so low-impact post-construction BMPs, achieve significant reduction of pollutant loading and runoff volume as well as greatly enhanced recharge rates compared to both developments with no BMPs and developments with basic treatment BMPs.

- Typical development categories, ranging from single family residential to large commercial, can feasibly implement low-impact post-construction BMPs designed in compliance with the draft permit's requirements, as modified to include a lower, three percent EIA requirement.

This report covers the methods employed in the investigation, data sources, and references for both. It then presents the results, discusses their consequences, draws conclusions, and makes recommendations relative to the feasibility of utilizing low-impact development practices in Ventura County developments.

CASE STUDIES

Six case studies were selected to represent a range of urban development types considered to be representative of coastal Southern California, including Ventura County. These case studies involved: a multi-family residential complex (MFR), a relatively small-scale (23 homes) single-family residential development (Sm-SFR), a restaurant (REST), an office building (OFF), a relatively large (1000 homes) single-family residential development (Lg-SFR) and a sizeable commercial retail installation (COMM).[1]

Parking spaces were estimated to be 176 sq ft in area, which corresponds to 8 ft width by 22 ft length dimensions. Code requirements vary by jurisdiction, with the tendency now to drop below the traditional 200 sq ft average. About 180 sq ft is common, but various standards for full- and compact-car spaces, and for the mix of the two, can raise or lower the average.[2] The 176 sq ft size is considered to be a reasonable value for conventional practice.

Roadways and walkways assume a wide variety of patterns. Exclusive of the two SFR cases, simple, square parking lots with roadways around the four sides and square buildings with walkways also around the four sides were assumed. Roadways and walkways were taken to be 20 ft and 6 ft wide, respectively.

Single-family residences were assumed each to have a driveway 20 ft wide and 30 ft long. It was further assumed that each would have a sidewalk along the front of the lot, which was calculated to be 5749 sq ft in area. Assuming a square lot, the front dimension would be 76 ft. A 40-ft walkway was included within the property. Sidewalks and walkways were taken to be 4 ft wide.

Exclusive of the COMM case, the total area for all of these impervious features was subtracted from the total site area to estimate the pervious area, which was assumed to have conventional landscaping cover (grass, small herbaceous decorative plants, bushes, and a few trees). For the COMM scenario, the hypothetical total impervious cover was enlarged by 10 percent to represent the landscaping, on the belief that a typical retail commercial establishment would typically be mostly impervious.

Table 1 (page 5) summarizes the characteristics of the six case studies. The table also provides the recorded or estimated areas in each land use and cover type.

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[1] Building permit records from the City of San Marcos in San Diego County provided data on total site areas for the first four case studies, including numbers of buildings, building footprint areas (including porch and garage for Sm-SFR), and numbers of parking spaces associated with the development projects. While the building permit records made no reference to features such as roadways, walkways, and landscaping normally associated with development projects, these features were taken into account in the case studies using assumptions described herein. Larger developments were not represented in the sampling of building permits from the San Marcos database. To take larger development projects into account in the subsequent analysis, the two larger scale case studies were hypothesized. The Lg-SFR scenario scaled up all land use estimates from the Sm-SFR case in the ratio of 1000:23. The hypothetical COMM scenario consisted of a building with a 2-acre footprint and 500 parking spaces. As with the smaller-scale cases, these hypothetical developments were assumed to have roadways, walkways, and landscaping, as described herein.

[2] J. Gibbons, *Parking Lots*, NONPOINT EDUCATION FOR MUNICIPAL OFFICERS, Technical Paper No. 5 (1999) (http://nemo.uconn.edu/tools/publications/tech_papers/tech_paper_5.pdf).

Table 1. Case Study Characteristics and Land Use and Land Cover Areas

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
No. buildings	11	23	1	1	1000	1
Total area (ft^2)	476,982	132,227	33,669	92,612	5,749,000	226,529
Roof area (ft^2)	184,338	34,949	3,220	7,500	1,519,522	87,120
No. parking spaces	438	-	33	37	-	500
Parking area (ft^2)	77,088	-	5808	6512	-	88,000
Access road area (ft^2)	22,212	-	6097	6456	-	23,732
Walkway area (ft^2)	33,960	10,656	1362	2078	463,289	7,084
Driveway area (ft^2)	-	13,800	-	-	600,000	-
Landscape area (ft^2)	159,384	72,822	17,182	70,066	3,166,190	20,594

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial

METHODS OF ANALYSIS

Annual Storm Water Runoff Volumes

Annual surface runoff volumes produced were estimated for both pre- and post-development conditions for each case study site. Runoff volume was computed as the product of annual precipitation, contributing drainage area, and a runoff coefficient (ratio of runoff produced to rainfall received). For impervious areas the following equation was used:

$$C = (0.009)\, I + 0.05$$

where I is the impervious percentage. This equation was derived by Schueler (1987) from Nationwide Urban Runoff Program data (U.S. Environmental Protection Agency 1983). With I = 100 percent for fully impervious surfaces, C is 0.95.

The basis for pervious area runoff coefficients was the Natural Resource Conservation Service's (NRCS) Urban Hydrology for Small Watersheds (NRCS 1986, as revised from the original 1975 edition). This model estimates storm event runoff as a function of precipitation and a variable representing land cover and soil, termed the curve number (CN). Larger events are forecast to produce a greater amount of runoff in relation to amount of rainfall because they more fully saturate the soil. Therefore, use of the model to estimate annual runoff requires selecting some event or group of events to represent the year. A 0.75-inch rainfall event was used in the analysis here for the relative comparison between pre- and post-development and applied to deriving a runoff coefficient for annual estimates, recognizing that smaller storms would produce less and larger storms more runoff.

To select CN for the pre-development case, an analysis performed in the area of the Cedar Fire in San Diego County was used in which CN was determined before and after the 2003 fire.[3] In the San Diego analysis, CN = 83 was estimated for the pre-existing land cover, which was generally chaparral, a vegetative cover also typical of Ventura County. As indicated below, soils are also similar in Ventura and San Diego Counties, making the parameter selection reasonable for use in both locations. For post-development landscaping, CN = 86 was selected based on tabulated data in NRCS (1986) and professional judgment.

Pre- and post-development runoff quantities were computed with these CN values and the 0.75-inch rainfall, and then divided by the rainfall to obtain runoff coefficients. The results were 0.07

[3] American Forests, *San Diego Urban Ecosystem Analysis After the Cedar Fire* (Feb. 3, 2006) (http://www.ufei.org/files/pubs/SanDiegoUrbanEcosystemAnalysis-PostCedarFire.pdf).

and 0.12, respectively. Finally, total annual runoff volumes were estimated based on an average annual precipitation in the City of Ventura of 14.71 inches.[4]

Storm Water Runoff Pollutant Discharges

Annual pollutant mass discharges were estimated as the product of annual runoff volumes produced by the various land use and cover types and pollutant concentrations typical of those areas. Again, the 0.75-inch precipitation event was used as a basis for volumes. Storm water pollutant data have typically been measured and reported for general land use types (e.g., single-family residential, commercial). However, an investigation of low-impact development practices of the type this study sought to conduct demands data on specific land coverages. The literature offers few data on this basis. Those available and used herein were assembled by a consultant to the City of Seattle for a project in which the author participated. They appear in Attachment B (Herrera Environmental Consultants, Inc. undated).

Pollutant concentrations expected to occur typically in the mixed runoff from the several land use and cover types making up a development were estimated by mass balance; i.e., the concentrations from the different areas of the sites were combined in proportion to their contribution to the total runoff.

The Effect of Conventional Treatment BMPs on Runoff Volume, Pollutant Discharges, and Recharge Rates

The first question in analyzing how BMPs reduce runoff volumes and pollutant discharges was, What BMPs are being employed in Ventura County developments under the permit now in force? This permit is open-ended and provides regulated entities with a large number of choices and few fixed requirements. These options presumably include manufactured BMPs, such as drain inlet inserts (DIIs) and continuous deflective separation (CDS) units. Developments may also select such non-proprietary devices as extended-detention basins (EDBs) and biofiltration swales and filter strips. EDBs hold water for two to three days for solids settlement before releasing whatever does not infiltrate or evaporate. Biofiltration treats runoff through various processes mediated by vegetation and soil. In a swale, runoff flows at some depth in a channel, whereas a filter strip is a broad surface over which water sheet flows. Each of these BMP types was applied to each case study, although it is not clear that these BMPs, in actuality, have been implemented consistently within Ventura County to date.

The principal basis for the analysis of BMP performance was the California Department of Transportation's (CalTrans, 2004) BMP Retrofit Pilot Program, performed in San Diego and Los Angeles Counties. One important result of the program was that BMPs with a natural surface infiltrate and evaporate (probably, mostly infiltrate) a substantial amount of runoff, even if conditions do not appear to be favorable for an infiltration basin. On average, the EDBs, swales, and filter strips lost 40, 50 and 30 percent, respectively, of the entering flow before the discharge point. DIIs and CDS units do not contact runoff with a natural surface, and therefore do not reduce runoff volume.

The CalTrans program further determined that BMP effluent concentrations were usually a function of the influent concentrations, and equations were developed for the functional

[4] Ventura County Watershed Protection District (http://www.vcwatershed.org/fws/specialmedia.htm). The City of Ventura is considered to be representative of most of the developed and developing areas in Ventura County. However, there is some variation around the county, with the maximum precipitation registered at Ojai (annual average 21.32 inches). Ojai is about 15 miles inland and lies at elevation 745 ft at the foot of the Topatopa Mountains, the orographic effect of which influences its meteorology. Ojai's higher rainfall was taken into account in the calculations, and the report notes the few instances where it affected the conclusions.

relationships in these cases. BMPs generally reduced influent concentrations proportionately more when they were high. In relatively few situations influent concentrations were constant at an "irreducible minimum" level regardless of inflow concentrations.

In analyzing the effects of BMPs on the case study runoff, the first step was to reduce the runoff volumes estimated with no BMPs by the fractions observed to be lost in the pilot study. The next task was estimating the effluent concentrations from the relationships in the CalTrans report. The final step was calculating discharge pollutant loadings as the product of the reduced volumes and predicted effluent concentrations. As before, typical pollutant concentrations in the mixed runoff were established by mass balance.

Estimating Infiltration Capacity of the Case Study Sites

Infiltrating sufficient runoff to maintain pre-development hydrologic characteristics and prevent pollutant transport is the most effective way to protect surface receiving waters. Successfully applying infiltration requires soils and hydrogeological conditions that will pass water sufficiently rapidly to avoid overly-lengthy ponding, while not allowing percolating water to reach ground-water before the soil column captures pollutants.

The study assumed that infiltration would occur in surface facilities and not in below-ground trenches. The use of trenches is certainly possible, and was judged to be an approved BMP by CalTrans after the pilot study. However, the intent of this investigation was to determine the ability of pervious areas to manage the site runoff. This was accomplished by determining the infiltration capability of the pervious areas in their original condition for each development case study, and further assessing the pervious areas' infiltration capabilities if soils were modified according to low impact development practices.

The chief basis for this aspect of the work was an assessment of infiltration capacity and benefits for Los Angeles' San Fernando Valley (Chralowicz et al. 2001). The Chralowicz study posited providing 0.1-0.5 acre for infiltration basins to serve each 5 acres of contributing drainage area. At 2-3 ft deep, it was estimated that such basins could infiltrate 0.90-1.87 acre-ft/year of runoff in San Fernando Valley conditions. Soils there are generally various loam textures with infiltration rates of approximately 0.5-2.0 inches/hour. The most prominent soils in Ventura County, at least relatively near the coast, are loams, sandy loams, loamy sands, and silty clay loams, thus making the conclusions of the San Fernando Valley study applicable for these purposes.[5] This information was used to estimate how much of each case study site's annual runoff would be infiltratable, and if the pervious portion would provide sufficient area for infiltration. For instance, if sufficient area were available, the infiltration configuration would not have to be in basin form but could be shallower and larger in surface area. This study's analyses assumed the use of bioretention areas rather than traditional infiltration basins.

Volume and Pollutant Source Reduction Strategies

As mentioned above, the essence of low-impact development is reducing runoff problems before they can develop, at their sources, or exploiting the infiltration and treatment abilities of soils and vegetation. If a site's existing infiltration and treatment capabilities are inadequate to preserve pre-development hydrology and prevent runoff from causing or contributing to violations of water quality standards, then LID-based source reduction strategies can be implemented, infiltration and treatment capabilities can be upgraded, or both.

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[5] Cabrillo Port Liquefied Natural Gas Deepwater Port Draft EIS/EIR (Oct. 2004) (http://www.cabrilloport.ene.com/files/eiseir/4.05%20%20-Agriculture%20and%20Soils.pdf).

Source reduction can be accomplished through various LID techniques. Soil can be upgraded to store runoff until it can infiltrate, evaporate, or transpire from plants through compost addition. Soil amendment, as this practice is known, is a standard LID technique.

Upgraded soils are used in bioretention cells that hold runoff and effect its transfer to the subsurface zone. This standard LID tool can be used where sufficient space is available. This study analyzed whether the six development case study sites would have sufficient space to effectively reduce runoff using bioretention cells, assuming the soils and vegetation could be amended and enhanced where necessary.

Conventional pavements can be converted to porous asphalt or concrete or replaced with concrete or plastic unit pavers or grid systems. For such approaches to be most effective, the soils must be capable of infiltrating the runoff passing through, and may require renovation.

Source reduction can be enhanced by the LID practice of water harvesting, in which water from impervious surfaces is captured and stored for reuse in irrigation or gray water systems. For example, runoff from roofs and parking lots can be harvested, with the former being somewhat easier because of the possibility of avoiding pumping to use the water and fewer pollutants. Harvesting is a standard technique for Leadership in Energy and Environmental Design (LEED) buildings.[6] Many successful systems of this type are in operation, such as the Natural Resources Defense Council offices (Santa Monica, CA), the King County Administration Building (Seattle, WA), and two buildings on the Portland State University campus (Portland, OR). This investigation examined how water harvesting could contribute to storm water management for case study sites where infiltration capacity, available space, or both appeared to be limited.

RESULTS OF THE ANALYSIS

1. "Base Case" Analysis: Development without Storm Water Controls

Comparison of Pre- and Post-Development Runoff Volumes

Table 2 (page 9) presents a comparison between the estimated runoff volumes generated by the respective case study sites in the pre- and post-development conditions, assuming implementation of no storm water controls on the developed sites. On sites dominated by impervious land cover, most of the infiltration that would recharge groundwater in the undeveloped state is expected to be lost to surface runoff after development. This greatly increased surface flow would raise peak flow rates and volumes in receiving water courses, raise flooding risk, and transport pollutants. Only the office building, the plan for which retained substantial pervious area, would lose less than half of the site's pre-development recharge.

[6] New Buildings Institute, Inc., *Advanced Buildings* (2005) (http://www.poweryourdesign.com/LEEDGuide.pdf).

Table 2. Pre- and Post-Development without BMPs: Distribution of Surface Runoff Versus Recharge to Groundwater

Annual Volume (acre-ft)	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
Precipitation[b]	13.4	3.72	0.95	2.60	162	6.37
Pre-development runoff[c]	0.94	0.26	0.07	0.18	11	0.45
Pre-development recharge[d]	12.5	3.46	0.88	2.42	150	5.92
Post-development impervious runoff[c]	8.48	1.59	0.44	0.60	69	5.50
Post-development pervious runoff[c]	0.54	0.25	0.06	0.24	11	0.07
Post-development total runoff[c]	9.02	1.83	0.50	0.84	80	5.57
Post-development recharge[d]	4.39	1.88	0.45	1.76	82	0.80
Post-development recharge loss (% of pre-development recharge)	8.08 (65%)	1.57 (46%)	0.43 (49%)	0.66 (27%)	68 (45%)	5.12 (86%)

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial
[b] Volume of precipitation on total project area
[c] Quantity of water discharged from the site on the surface
[d] Quantity of water infiltrating the soil; the difference between precipitation and runoff

Pollutant Concentrations and Loadings

Table 3 presents the pollutant concentrations from the literature and loadings calculated as described for the various land use and cover types represented by the case studies. Landscaped areas are expected to release the highest TSS concentration, although relatively low TSS mass loading because of the low runoff coefficient. The highest copper concentrations and loadings are expected from parking lots. Roofs, especially commercial roofs, top the list for both zinc concentrations and loadings. Landscaping would issue by far the highest phosphorus, although access roads and driveways would contribute the highest mass loadings.

Table 3. Pollutant Concentrations and Loadings for Case Study Land Use and Cover Types

Land Use	Concentrations				Loadings			
	TSS (mg/L)	TCu (mg/L)	TZn (mg/L)	TP (mg/L)	Lbs. TSS/ acre-year	Lbs. TCu/ acre-year	Lbs. TZn/ acre-year	Lbs. TP/ acre-year
Residential roof	25	0.013	0.159	0.11	79	0.041	0.503	0.348
Commercial roof	18	0.014	0.281	0.14	57	0.044	0.889	0.443
Access road/driveway	120	0.022	0.118	0.66	380	0.070	0.373	2.088
Parking	75	0.036	0.097	0.14	237	0.114	0.307	0.443
Walkway	25	0.013	0.059	0.11	79	0.041	0.187	0.348
Landscaping	213	0.013	0.059	2.04	85	0.005	0.024	0.815

The CTR acute criteria for copper and zinc are 0.0048 mg/L and 0.090 mg/L, respectively. Table 3 shows that all developed land uses are expected to discharge copper above the criterion, based on the mass balance calculations using concentrations from Table 3. Any surface release from the case study sites would violate the criterion at the point of discharge, although dilution by the receiving water would lower the concentration below the criterion at some point. Even if copper mass loadings are reduced by BMPs, any surface discharge would exceed the criterion initially, but it would be easier to dilute below that level. In contrast, runoff from some land covers would not violate the acute zinc criterion. Because of this difference, the evaluation considered whether or not the zinc criterion would be exceeded in each analysis, whereas there was no point in this analysis for copper. There are no equivalent water quality

criteria for TSS and TP; hence, their concentrations were not further analyzed in the different scenarios.

Table 4 shows the overall loadings, as well as zinc concentrations, expected to be delivered from the case study developments should they not be fitted with any BMPs. As Table 4 shows, all cases are forecast to exceed the 0.090 mg/L acute zinc criterion, and the retail commercial development does so by a wide margin. Because of its size, the large residential development dominates the mass loading emissions.

Table 4. Case Study Pollutant Concentration and Loading Estimates without BMPs

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
TZn (mg/L)	0.127	0.123	0.128	0.133	0.123	0.175
Lbs. TSS/year	1321	345	125	242	15016	853
Lbs. TCu/year	0.46	0.074	0.032	0.045	3.21	0.37
Lbs. TZn/year	3.09	0.607	0.174	0.301	26.4	2.64
Lbs. TP/year	6.58	2.39	0.72	1.78	104	3.36

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial

2. *"Conventional BMP" Analysis: Effect of Basic Treatment BMPs*

Effect of Basic Treatment BMPs on Post-Development Runoff Volumes

The current permit allows regulated parties to select from a range of BMPs in order to treat or infiltrate a given quantity of annual rainfall. The range includes drain inlet inserts, CDS units, and other manufactured BMPs, detention vaults, and sand filters, all of which isolate runoff from the soil; as well as basins and biofiltration BMPs built in soil and generally having vegetation. Treatment BMPs that do not permit any runoff contact with soils discharge as much storm water runoff as equivalent sites with no BMPs, and hence yield zero savings in recharge. As mentioned above, the CalTrans (2004) study found that BMPs with a natural surface can reduce runoff by substantial margins (30-50 percent for extended-detention basins and biofiltration).

With such a wide range of BMPs in use, runoff reduction ranging from 0 to 50 percent, and a lack of clearly ascertainable requirements, it is not possible to make a single estimate of how much recharge savings are afforded by maximal implementation of the current permit. We made the following assumptions regarding implementation of BMPs. Assuming natural-surface BMPs perform at the average of the three types tested by CalTrans (2004), i.e., 40 percent runoff reduction, the estimate can be bounded as shown in Table 5 (page 11). The table demonstrates that allowing free choice of BMPs without regard to their ability to direct water into the ground forfeits substantial groundwater recharge benefits when hardened-surface BMPs are selected. Use of soil-based conventional BMPs could cut recharge losses from half or e more of the full potential to about one-quarter to one-third or less, except with the highly impervious commercial development. This analysis shows the wisdom of draining impervious to pervious surfaces, even if those surfaces are not prepared in any special way. But as subsequent analyses showed, soil amendment can gain considerably greater benefits.

Table 5. Pre- and Post-Development with Conventional BMPs: Distribution of Surface Runoff Versus Recharge to Groundwater

Annual Volume (acre-ft)	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
Precipitation[b]	13.4	3.72	0.95	2.60	162	6.37
Pre-development runoff[c]	0.94	0.26	0.07	0.18	11	0.45
Pre-development recharge	12.5	3.46	0.88	2.42	150	5.92
Post-development impervious runoff[c, d]	5.09-8.48	0.95-1.59	0.26-0.44	0.36-0.60	41-69	3.30-5.50
Post-development pervious runoff[c, d]	0.32-0.54	0.15-0.25	0.04-0.06	0.14-0.24	6.6-11	0.04-0.07
Post-development total runoff[c, d]	5.41-9.02	1.10-1.83	0.30-0.50	0.50-0.84	48-80	3.34-5.57
Post-development recharge[d, e]	4.39-7.99	1.88-2.62	0.45-0.65	1.76-2.10	82-114	0.80-3.03
Post-development recharge loss (% of pre-development recharge)[d, e]	4.51-8.08 (36-65%)	0.84-1.57 (24-46%)	0.23-0.43 (26-49%)	0.32-0.66 (13-27%)	36-68 (24-45%)	2.89-5.12 (49-86%)

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial. Ranges represent 40 percent runoff volume reduction, with full site coverage by BMPs having a natural surface, to no reduction, with BMPs isolating runoff from soil.
[b] Volume of precipitation on total project area
[c] Quantity of water discharged from the site on the surface
[d] Ranging from the quantity with hardened bed BMPs to the quantity with soil-based BMPs
[e] Quantity of water infiltrating the soil; the difference between precipitation and runoff

Effect of Basic Treatment BMPs on Pollutant Discharges

Table 6 (page 12) presents estimates of zinc effluent concentrations and mass loadings of the various pollutants discharged from four types of conventional treatment BMPs. The manufactured CDS BMPs in this table, which do not expose runoff to soil or vegetation, are not expected to drop any of the concentrations sufficiently to meet the acute zinc criterion at the discharge point. The loading reduction results show the CDS units always performing below 50 percent reduction for all pollutants analyzed, and most often in the vicinity of 20 percent, with zero copper reduction.

When treated with swales or filter strips, effluents from each development case study site are expected to fall below the CTR acute zinc criterion. All but the large commercial site would meet the criterion with EDB treatment. These natural-surface BMPs, if fully implemented and well maintained, are predicted to prevent the majority of the pollutant masses generated on most of the development sites from reaching a receiving water. Only total phosphorus reduction falls below 50 percent for two case studies. Otherwise, mass loading reductions range from about 60 to above 80 percent for the EDB, swale, and filter strip. This data indicates that draining impervious to pervious surfaces, even if those surfaces are not prepared in any special way, pays water quality as well as hydrologic dividends.

Table 6. Pollutant Concentration and Loading Reduction Estimates with Conventional BMPs

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
Effluent Concentrations:						
CDS TZn (mg/L)[a]	0.095	0.095	0.098	0.102	0.095	0.131
EDB TZn (mg/L)[a]	0.085	0.086	0.084	0.084	0.086	0.098
Swale TZn (mg/L)	0.055	0.054	0.055	0.056	0.054	0.068
Filter strip TZn (mg/L)	0.039	0.039	0.039	0.041	0.039	0.048
Loading Reductions:						
CDS TSS loading reduction	15.7%	19.9%	22.0%	24.0%	19.9%	16.9%
CDS TCu loading reduction	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CDS TZn loading reduction	22.7%	22.4%	22.9%	23.1%	22.4%	25.1%
CDS TP loading reduction	30.6%	41.5%	40.7%	45.9%	41.5%	20.3%
EDB TSS loading reduction	68.1%	73.7%	79.0%	81.1%	73.7%	71.7%
EDB TCu loading reduction	61.9%	55.7%	66.2%	63.0%	55.7%	66.8%
EDB TZn loading reduction	59.7%	59.6%	60.4%	61.9%	59.6%	66.6%
EDB TP loading reduction	61.9%	69.7%	69.1%	72.9%	69.7%	54.5%
Swale TSS loading reduction	68.8%	71.1%	73.1%	73.9%	71.1%	69.4%
Swale TCu loading reduction	72.5%	68.5%	78.2%	73.3%	68.5%	75.8%
Swale TZn loading reduction	78.4%	78.1%	84.3%	78.8%	78.1%	80.7%
Swale TP loading reduction	66.3%	70.7%	67.2%	76.2%	70.7%	55.0%
Filter strip TSS loading reduction	69.9%	75.4%	80.6%	82.6%	75.4%	72.3%
Filter strip TCu loading reduction	74.4%	69.1%	78.2%	75.4%	69.1%	78.7%
Filter strip TZn loading reduction	78.3%	77.9%	78.4%	78.7%	77.9%	80.9%
Filter strip TP loading reduction	48.4%	53.1%	63.7%	59.8%	53.1%	34.6%

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial; CDS— continuous deflective separation unit; EDB—extended-detention basin

3. LID Analysis: Development According to Modified Draft Permit Provisions

(a) Hydrologic Analysis

The LID analysis was first performed according to the Draft Permit provisions under the Planning and Land Development Program (Part 4, section E). In this analysis, however, EIA was limited to three instead of five percent, under the reasoning presented in Attachment A. All runoff from NCIA was assumed to drain to vegetated surfaces, as provided in the Draft Permit.

One goal of this exercise was to identify methods that reduce runoff production in the first place. It was hypothesized that implementation of source reduction techniques could allow all of the case study sites to infiltrate substantial proportions of the developed site runoff, advancing the hydromodification mitigation objective of the Draft Permit. When runoff is dispersed into the soil instead of being rapidly collected and conveyed away, it recharges groundwater, supplementing a resource that maintains dry season stream flow and wetlands. An increased water balance can be tapped by humans for potable, irrigation, and process water supply. Additionally, runoff volume reduction would commensurately decrease pollutant mass loadings.

Accordingly, the analysis considered the practicability of more than one scenario by which the draft permit's terms could be met, as modified to reflect three percent EIA. In one option, all roof runoff is harvested and stored for some beneficial use. A second option disperses runoff into the soil via roof downspout infiltration trenches. The former option is probably best suited to cases like the large commercial and office buildings, while distribution in the soil would fit best with residences and relatively small commercial developments. The analysis was repeated with the assumptions of harvesting OFF and COMM roof runoff for some beneficial use and dispersing roof runoff from the remaining four cases in roof downspout infiltration systems.

Expected Infiltration Capacities of the Case Study Sites

The first inquiry on this subject sought to determine how much of the total annual runoff each property is expected to infiltrate. This assessment tested the feasibility of draining all but three percent of impervious area to pervious land on the sites. Based on the findings of Chralowicz et al. (2001), it was assumed that an infiltration zone of 0.1-0.5 acres in area and 2-3 ft deep would serve a drainage catchment area in the size range 0-5 acres and infiltrate 0.9-1.9 acre-ft/year. The conclusions of Chralowicz et al. (2001) were extrapolated to conservatively assume that 0.5 acre would be required to serve each additional five acres of catchment, and would infiltrate an incremental 1.4 acre-ft/year (the midpoint of the 0.9-1.9 acre-ft/year range). According to these assumptions, the following schedule of estimates applies:

Pervious Area Available for Infiltration	Catchment Served acres	Infiltration Capacity
0.5 acres	0-5 acres	1.4 acre-ft/year
1.0 acres	5-10 acres	2.8 acre-ft/year
1.5 acres	10-15 acres	4.2 acre-ft/year
(Etc.)	...	...

As a formula, infiltration capacity ≈ 2.8 x available pervious area. To apply the formula conservatively, the available area was reduced to the next lower 0.5-acre increment before multiplying by 2.8.

As shown in Table 7, five of the six sites have adequate or greater capacity to infiltrate the full annual runoff volume from NCIA and pervious areas where EIA is limited to three percent of the total site area (four at the higher Ojai rainfall). Indeed, five of the six development types have sufficient pervious area to infiltrate *all* runoff, including runoff from EIA areas. With the most representative rainfall, only the large commercial development, with little available pervious area, falls short of the needed capacity to infiltrate all rainfall, but it still has the capacity to meet the terms of the draft permit, as modified for this analysis. These results are based on infiltrating in the native soils with no soil amendment. For any development project at which infiltration-oriented BMPs are considered, it is important that infiltration potential be carefully assessed using site-specific soils and hydrogeologic data. In the event such an investigation reveals a marginal condition (e.g., hydraulic conductivity, spacing to groundwater) for infiltration basins, soils could be enhanced to produce bioretention zones to assist infiltration. Notably, the four case studies with far greater than necessary infiltration capacity would offer substantial flexibility in designing infiltration, allowing ponding at less than 2-3 ft depth.

Table 7. Infiltration and Runoff Volume With 3 Percent EIA and All NCIA Draining to Pervious Areas

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
EIA runoff (acre-ft/year)	0.38	0.11	0.03	0.07	4.6	0.18
NCIA + pervious area runoff (acre-ft/year)	**8.63**	**1.73**	**0.47**	**0.76**	**75.0**	**5.39**
Total runoff (acre-ft/year)	9.01	1.84	0.50	0.83	79.6	5.57
Pervious area available for infiltration (acres)	3.66	1.67	0.39	1.61	72.7	0.47
Estimated infiltration capacity (acre-ft/year)[b]	**9.8**	**4.2**	**1.4**	**4.2**	**203**	**1.4**
Infiltration capacity [c]	> 100%[d]	> 100%	> 100%	> 100%	> 100%	~26% [d]

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial;
[b] Based on Chralowicz et al. (2001) according to the schedule described above
[c] Compare runoff production from NCIA + pervious area (**row 3**) with estimated infiltration capacity (**row 6**)
[d] At Ojai rainfall levels, capacity would be ~78 percent at the MFR site and ~18 percent at the COMM site.

As Table 7 shows, five of the six case study sites have the capacity to infiltrate *all* runoff produced onsite by draining impervious surfaces to pervious areas. Even runoff from the area assumed to be EIA could be infiltrated in most cases based on the amount of pervious area available in typical development projects. By showing that it is possible under normal site conditions and using native soils to retain *all* runoff in typical developments, these results demonstrate that a three percent EIA requirement, which would not demand that all runoff be retained, is feasible and practicable.

Additional Source Reduction Capabilities of the Case Study Sites: Water Harvesting Example

Infiltration is one of a wide variety of LID-based source reduction techniques. Where site conditions such as soil quality or available area limit a site's infiltration capacity, other source LID measures can enhance a site's runoff retention capability. For example, soil amendment, which improves infiltration, is a standard LID technique. Water harvesting is another. Such practices can also be used where infiltration capacity is adequate, but the developer desires greater flexibility for land use on-site. Table 8 shows the added implementation flexibility created by subtracting roof runoff by harvesting it or efficiently directing it into the soil through downspout dispersion systems, further demonstrating the feasibility of meeting the draft permit's proposed requirements, as modified to include a three percent EIA standard.

Table 8. Infiltration and Runoff Volume Reduction Analysis Including Roof Runoff Harvesting or Disposal in Infiltration Trenches (Assuming 3 Percent EIA and All NCIA Draining to Pervious Areas)

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
EIA runoff (acre-ft/year)	0.38	0.11	0.03	0.07	4.6	0.18
Roof runoff (acre-ft/year)	4.92	0.93	0.09	0.20	41	2.33
Other NCIA + pervious area runoff (acre-ft/year)	**3.71**	**0.79**	**0.39**	**0.56**	**35**	**3.06**
Total runoff (acre-ft/year)	9.01	1.84	0.50	0.83	79.6	5.57
Pervious area available for infiltration (acres)	3.66	1.67	0.39	1.61	72.7	0.47
Estimated infiltration capacity (acre-ft/year)[b]	**9.8**	**4.2**	**1.4**	**4.2**	**203**	**1.4**
Infiltration capacity [c]	> 100%	> 100%	> 100%	> 100%	> 100%	~45% [d]

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial;
[b] Based on Chralowicz et al. (2001) according to the schedule described above
[c] Comparison of runoff production from NCIA + pervious area (**row 3**) with estimated infiltration capacity (**row 6**)
[d] If the higher rainfall at Ojai is assumed, capacity would be ~32 percent of the amount needed for the COMM case.

Effect of Full LID Approach on Recharge

Table 9 (page 15) shows the recharge benefits of preventing roofs from generating runoff and infiltrating as much as possible of the runoff from the remainder of the case study sites. The data show that LID methods offer significant benefits relative to the baseline (no storm water controls) in all cases. These benefits are particularly impressive in developments with relatively high site imperviousness, such as in the MFR and COMM cases. In the latter case the full LID approach (excluding the common and effective practice of soil amendment) would cut loss of the potential water resource represented by recharge and harvesting from 86 to 37 percent.

Table 9. Comparison of Water Captured Annually (in acre-ft) from Development Sites for Beneficial Use With a Full LID Approach Compared to Development With No BMPs

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
Pre-development recharge[b] (acre-ft)	12.5	3.46	0.88	2.42	150	5.92
No BMPs:						
post-development recharge [b] (acre-ft)	4.39	1.88	0.45	1.76	82	0.80
post-development runoff (acre-ft)	8.08	1.57	0.43	0.66	68	5.12
post-development % recharge lost	65%	46%	49%	27%	45%	86%
Full LID approach:						
post-development runoff capture (acre-ft)[c]	12.5	3.46	0.88	2.42	150	3.73
post-development runoff (acre-ft)	0	0	0	0	0	2.19
post-development % recharge lost	0%	0%	0%	0%	0%	37%

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial
[b] Quantity of water infiltrating the soil; the difference between precipitation and runoff
[c] Water either entirely infiltrated in BMPs and recharged to groundwater or partially harvested from roofs and partially infiltrated in BMPs. For the first five case studies, EIA was not distinguished from the remainder of the development, because these sites have the potential to capture all runoff.

(b) Water Quality Analysis

As outlined above, it was assumed that EIA discharges, as well as runoff from all pervious surfaces, are subject to treatment control. For purposes of the analysis, treatment control was assumed to be provided by conventional sand filtration. This choice is appropriate for study purposes for two reasons. First, sand filters can be installed below grade, and land above can be put to other uses. Under the Draft Permit's approach, pervious area should be reserved for receiving NCIA drainage, and using sand filters would not draw land away from that service or other site uses. A second reason for the choice is that sand filter performance data equivalent to the data used in analyzing other conventional BMPs are available from the CalTrans (2004) work. Sand filters may or may not expose water to soil, depending on whether or not they have a hard bed. This analysis assumed a hard bed, meaning that no infiltration would occur and thus there would be no additional recharge in sand filters. Performance would be even better than shown in the analytical results if sand filters were built in earth.

Pollutant Discharge Reduction Through LID Techniques

The preceding analyses demonstrated that each of the six case studies could feasibly comply with the draft permit's requirements, as modified to include a more protective three percent EIA standard. Moreover, for five of the six case studies, *all* storm water discharges could be eliminated at least under most meteorological conditions by dispersing runoff from impervious surfaces to pervious areas. Therefore, pollutant additions to receiving waters would also be eliminated. This demonstrates not only that a lower EIA (three percent) is a feasible and practicable approach to maintaining the natural hydrology of land being developed, as discussed above, but that a lower EIA is a feasible and practicable way to eliminate the discharge of pollutants that could cause or contribute to violations of water quality standards.

While the high proportion of impervious area present on the large commercial site relative to pervious area would not allow eliminating all discharge, harvesting roof water and draining NCIA to properly-prepared pervious area would substantially decrease the volume discharged. Deployment of treatment control BMPs (e.g. sand filter treatment) could cut contaminant discharges from pollutants in the remaining volume of runoff to low levels.

Table 10 presents the pollutant reductions from the untreated case achievable through the complete LID approach described above in comparison to conventional treatments (from Table 6). Assuming EIA still discharges through sand filters, pollutant loadings from the untreated condition are expected to decrease by more than 96 percent for all but the COMM case. In that challenging case loadings would still fall by at least 89 percent for TSS and the metals and by 83 percent for total phosphorus, assuming City of Ventura rainfall levels, and slightly less assuming the higher Ojai rainfall levels. Thus, the Draft Permit's basic premise of disconnecting most impervious area, supplemented by specially managing roof water, is shown by both water quality and hydrologic results to be feasible and to afford broad and significant environmental benefits.

Table 10. Pollutant Loading Reduction Estimates With a Full LID Approach Relative to Conventional BMPs

	MFR[a]	Sm-SFR[a]	REST[a]	OFF[a]	Lg-SFR[a]	COMM[a]
Conventional TSS loading reduction[b]	15.7-69.9%	19.9-75.4%	22.0-80.6%	24.0-82.6%	19.9-75.4%	16.9-72.3%
Conventional TCu loading reduction[b]	0.0-74.4%	0.0-69.1%	0.0-78.2%	0.0-75.4%	0.0-69.1%	0.0-78.7%
Conventional TZn loading reduction[b]	22.7-78.4%	22.4-78.1%	22.9-84.3%	23.1-78.8%	22.4-78.1%	25.1-80.9%
Conventional TP loading reduction[b]	30.6-66.3%	41.5-70.7%	40.7-69.1%	45.9-76.2%	41.5-70.7%	20.3-55.0%
LID TSS loading reduction[c]	99.4%	99.3%	99.5%	99.4%	99.3%	89.0%[d]
LID TCu loading reduction[c]	98.1%	96.7%	98.0%	96.2%	96.7%	90.6%[d]
LID TZn loading reduction[c]	99.1%	98.8%	98.9%	98.3%	98.8%	94.8%[d]
LID TP loading reduction[c]	98.1%	98.6%	98.8%	98.7%	98.6%	83.1%[d]

[a] MFR—multi-family residential; Sm-SFR—small-scale single-family residential; REST—restaurant; OFF—office building; Lg-SFR—large-scale single-family residential; COMM—retail commercial; CDS— continuous deflective separation unit; EDB—extended-detention basin; NCIA—not connected impervious area; EIA—effective (connected) impervious area

[b] Range from Table 6 represented by treatment by CDS unit, EDB, biofiltration swale, or biofiltration strip

[c] Based on directing roof runoff to downspout infiltration trenches (MFR, Sm-SFR, REST, and Lg-SFR) or harvesting it (OFF and COMM), draining other NCIA to pervious areas, and treating EIA with sand filters

[d] If the higher rainfall at Ojai is assumed, reduction estimates for TSS, TCu, TZn, and TP would be 84.0, 86.3, 92.5, and 75.5 percent, respectively.

SUMMARY AND CONCLUSIONS

This paper demonstrated that common Ventura County area residential and commercial development types subject to the Municipal NPDES Permit are likely, without storm water management, to reduce groundwater recharge from the predevelopment state by approximately half in most cases to a much higher fraction with a large ratio of impervious to pervious area. With no treatment, runoff from these developments is expected to exceed CTR acute copper and zinc criteria at the point of discharge and to deliver large pollutant mass loadings to receiving waters.

Conventional soil-based BMP solutions that promote and are component parts of low-impact development approaches, by contrast, regain about 30-50 percent of the recharge lost in development without storm water management, although commercially-manufactured filtration and hydrodynamic BMPs for storm water management give no benefits in this area. It is expected the soil-based BMPs generally would release effluent that meets the acute zinc criterion at the point of discharge, although it would still exceed the copper limit. Excepting phosphorus, it was found that these BMPs would capture and prevent the movement to receiving waters of the majority of the pollutant loadings considered in the analysis.

It was found that a three percent Effective Impervious Area standard can be met in typical developments, and that by draining all site runoff to pervious areas, runoff can be eliminated entirely in most development types. This result was reached assuming the use of native soils. Soil enhancement (typically, with compost) can further advance infiltration. Draining impervious surfaces onto the loam soils typical of Ventura County, in connection with limiting directly connected impervious area to three percent of the site total area, should eliminate storm runoff from some development types and greatly reduce it from more highly impervious types. Adding roof runoff elimination to the LID approach (by harvesting or directing it to downspout infiltration trenches) should eliminate runoff from all but mostly impervious developments. Even in the development scenario involving the highest relative proportion of impervious surface, losses of rainfall capture for beneficial uses could be reduced from more than 85 to less than 40 percent, and pollutant mass loadings would fall by 83-95 percent from the untreated scenario when draining to pervious areas was supplemented with water harvesting. These results demonstrate the basic soundness of the Draft Permit's concept to limit directly connected impervious area and drain the remainder over pervious surfaces.

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ATTACHMENT A

JUSTIFICATION OF PROPOSED EFFECTIVE IMPERVIOUS AREA LIMITATION

Summary

The literature shows that adverse impacts to the physical habitat and biological integrity of receiving waters occur as a result of the conversion of natural areas to impervious cover. These effects are observed at the lowest levels of impervious cover in associated catchments (two to three percent) and are pronounced by the point that impervious cover reaches five percent. To protect biological productivity, physical habitat, and other beneficial uses, effective impervious area should be capped at no more than three percent.

I. Impacts to physical habitat of California receiving waters observed at three percent impervious cover

Stein *et al.*[7] note that while studies from parts of the country with climates more humid than California's indicate that physical degradation of stream channels can initially be detected when watershed impervious cover approaches 10%, biological effects, which may be more difficult to detect, may occur at lower levels (CWP 2003).[8] Recent studies from both northern and southern California indicate that intermittent and ephemeral streams in California are more susceptible to the effects of hydromodification than streams from other regions of the US, with stream degradation being recognized when the associated catchment's impervious cover is as little as 3-5% (Coleman *et al.* 2005).[9] Furthermore, supplemental landscape irrigation in semi-arid regions, like California, can substantially increase the frequency of erosive flows (AQUA TERRA Consultants 2004).[10]

Coleman, *et al.*[3] report that the ephemeral/intermittent streams in southern California (northwestern Los Angeles County through southern Ventura County to central Orange County) appear to be more sensitive to changes in percent impervious cover than streams in other areas. Stream channel response can be represented using an *enlargement curve*, which relates the percent of impervious cover to a change in cross-sectional area. The data for southern California streams forms a relationship very similar in shape to the enlargement curves developed for other North American streams. However, the curve for southern California streams is above the general curve for streams in other climates. This suggests that a specific enlargement ratio is produced at a lower value of impervious surface area in southern California than in other parts of North America. Specifically, the estimated threshold of response is approximately 2-3% impervious cover, as compared to 7-10% for other portions of the U.S. It is important to note that this conclusion applies specifically to streams with a catchment drainage area less than 5 square miles.

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[10] AQUA TERRA Consultants, (2004) *Urbanization and Channel Stability Assessment in the Arroyo Simi Watershed of Ventura County CA*. FINAL REPORT. Prepared for Ventura County Watershed Protection Division, Ventura CA.

This study concludes that disconnecting impervious areas from the drainage network and adjacent impervious areas is a key approach to protecting channel stability. Utilizing this strategy can make it practical to keep the effective impervious cover (*i.e.* the amount hydrologically connected to the stream) equal to or less than the identified threshold of 2-3%.

II. Impacts to biological integrity of receiving waters observed with any conversion from natural to impervious surface

Two separate studies conducted by Horner *et al.*[11,12] in the Puget Sound region (Washington State), Montgomery County, Maryland, and Austin, Texas built a database totaling more than 650 reaches on low-order streams in watersheds ranging from no urbanization and relatively little human influence (the reference state, representing "best attainable" conditions) to highly urban (>60 percent total impervious area, "TIA"). Biological health was assessed according to the benthic index of biotic integrity (B-IBI) and, in Puget Sound, the ratio of young-of-the-year coho salmon (*Oncorhynchus kisutch*), a relatively stress-intolerant fish, to cutthroat trout (*Oncorhynchus clarki*), a more stress-tolerant species. The following discussion summarizes the results and conclusions of these two studies.

There is no single cause for the decline of water resource conditions in urbanizing watersheds. Instead, it is the cumulative effects of multiple stressors that are responsible for degraded aquatic habitat and water quality. Imperviousness, while not a perfect yardstick, appears to be a useful predictor of ecological condition. However, a range of stream conditions can be associated with any given level of imperviousness. In general, only streams that retain a significant proportion of their natural vegetative land-cover and have very low levels of watershed imperviousness appear to retain their natural ecological integrity. It is this change in watershed land-cover that is largely responsible for the shift in hydrologic regime from a sub-surface flow dominated system to one dominated by surface runoff.

While the decline in ecological integrity is relatively continuous and is consistent for all parameters, the impact on physical conditions appears to be more pronounced earlier in the urbanization process than chemical degradation. It is generally acknowledged, based on field research and hydrologic modeling, that it is the shift in hydrologic conditions that is the driving force behind physical changes in urban stream-wetland ecosystems.

Multiple scales of impact operate within urbanizing watersheds: landscape-level impacts, including the loss of natural forest cover and the increase in impervious surface area throughout the watershed; riparian corridor-specific impacts such as encroachment, fragmentation, and loss of native vegetation; and local impacts such as water diversions, exotic vegetation, stream channelization, streambank hardening, culvert installation, and pollution from the widespread use of pesticides and herbicides. All of these stressors contribute to the overall cumulative impact.

The researchers found that there is no clear threshold of urbanization below which there exists a "no-effect" condition. Instead, there appears to be a relatively continuous decline in almost all measures of water quality or ecological integrity. Losses of integrity occur from the lowest levels of TIA and are already pronounced by the point that TIA reaches 5 percent.

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[11] Horner, R. R., C. W. May, (2002) *The Limitations of Mitigation-Based Stormwater Management in the Pacific Northwest and the Potential of a Conservation Strategy based on Low-Impact Development Principles.* (Proceedings of the American Society of Engineers Stormwater Conference, Portland, OR).

[12] Horner, R.R., E. H. Livingston, C. W. May, J. Maxted, (2006) *BMPs, Impervious Cover, and Biological Integrity of Small Streams.* (Proceedings of the Eighth Biennial Stormwater Research and Watershed Management Conference, Tampa, FL).

Similarly, the Alliance for the Chesapeake Bay[13] reports that small-watershed studies by the Maryland Department of Natural Resources Biological Stream Survey have shown that some sensitive species are affected by even low amounts of impervious cover. In one study, no brook trout were observed in any stream whose watershed had more than 2 percent impervious cover, and brook trout were rare in any watershed with more than 0.5 percent impervious cover.

III. Ventura County's watersheds include biologically-significant water bodies

The literature discussed above is relevant to the watersheds of Ventura County, which contain rivers and streams that currently or historically support a variety of beneficial uses that may be impaired by water quality degradation and stream hydromodification as a result of storm water runoff from impervious land cover. Unlike some Southern California watersheds, Ventura County still has many natural stream systems with a high degree of natural functionality.

For instance, the Ventura River watershed in northwestern Ventura County "supports a large number of sensitive aquatic species,"[14] including steelhead trout, a federally-listed endangered species. Although "local populations of steelhead and rainbow trout have nearly been eliminated along the Ventura River" itself, the California Department of Fish and Game has "recognized the potential for the restoration of the estuary and enhancement of steelhead populations in the Ventura River."[15] Steelhead may also be present in tributaries such as San Antonio Creek.[16] Thriving rainbow trout populations exist in tributaries of the Ventura River including Matilija Creek and Coyote Creek.[17] The Ventura River either does or is projected to support the following beneficial uses: warm freshwater habitat; cold freshwater habitat; wildlife habitat; rare, threatened, or endangered species; migration of aquatic organisms; and spawning and reproduction.[18] Furthermore, the Ventura River Estuary also supports commercial fishing, shellfish harvesting, and wetland habitat.[19] The Ventura River receives municipal storm drain discharges from Ojai, San Buenaventura, and unincorporated areas of Ventura County.[20]

The Santa Clara River watershed in northern Ventura County "is the largest river system in southern California that remains in a relatively natural state."[21] Sespe Creek is one of the Santa Clara's largest tributaries, and "supports significant steelhead spawning and rearing habitat."[22] Other creeks in the Santa Clara River watershed that support steelhead are Piru Creek and Santa Paula Creek. Sespe Creek and the Santa Clara River also provide spawning habitat for the Pacific lamprey. Rainbow trout populations exist in tributaries of the Santa Clara River including Sespe Creek.[23] The creeks and the Santa Clara river do or are projected to support the following beneficial uses: warm freshwater habitat; cold freshwater habitat; wildlife habitat; preservation of biological habitats rare, threatened, or endangered species; migration of aquatic organisms; and spawning and reproduction.[24] Los Padres National Forest covers much of the Santa Clara River watershed, but increasing development in floodplain areas has been

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[13] Karl Blankenship, BAY JOURNAL,"It's a hard road ahead for meeting new sprawl goal: States will try to control growth of impervious" (July/August 2004), at http://www.bayjournal.com/article.cfm?article=66.
[14] Los Angeles Region Water Quality Control Plan (1994) p. 1-18 ("Basin Plan").
[15] Basin Plan, p. 1-16; Ventura County Environmental & Energy Resources Division, "Endangered Steelhead Trout in Ventura County: Past, Present, and Future," available at http://www.wasteless.org/Eye_articles/steelhead.htm.
[16] Ventura County Environmental & Energy Resources Division, "Steelhead Spawning in Ventura County," (2005), available at http://www.wasteless.org/Eye_articles/steehead2005.html.
[17] Ventura County Environmental & Energy Resources Division, "Endangered Steelhead Trout in Ventura County: Past, Present, and Future," available at http://www.wasteless.org/Eye_articles/steelhead.htm.
[18] Basin Plan, Table 2-1.
[19] Basin Plan, Table 2-4.
[20] Ventura County Watershed Protection District, *Report of Waste Discharge* (January 2005) at p. 3.
[21] Basin Plan, p. 1-16.
[22] Basin Plan, p. 1-16.
[23] Ventura County Environmental & Energy Resources Division, "Endangered Steelhead Trout in Ventura County: Past, Present, and Future," available at http://www.wasteless.org/Eye_articles/steelhead.htm.
[24] Basin Plan, Table 2-1.

identified as a threat to the river system's water quality.[25] Furthermore, the Santa Clara estuary supports the additional beneficial uses of shellfish harvesting and wetlands habitat.[26] The Santa Clara River receives municipal storm drain discharges from Fillmore, Oxnard, San Buenaventura, Santa Paula, and unincorporated areas of Ventura County.[27]

The Calleguas Creek watershed "empties into Mugu Lagoon, one of southern California's few remaining large wetlands."[28] It supports or is projected to support the following beneficial uses: estuarine habitat; marine habitat; wildlife habitat; preservation of biological habitats; rare, threatened, or endangered species; migration of aquatic organisms; spawning and reproduction; shellfish harvesting; and wetlands habitat.[29] Historically, Calleguas Creek drained largely agricultural areas. But this watershed has been under increasing pressure from sedimentation due to increased surface flow from municipal discharges and urban wastewaters, among other sources.[30] Increasing residential developments on steep slopes has been identified as a substantial contributing factor to the problem of accelerated erosion in the watershed (and sedimentation in the Lagoon). Calleguas Creek receives municipal storm drain discharges from Camarillo, Moorpark, Simi Valley, Thousand Oaks, and unincorporated areas of Ventura County.[31]

Ventura County's coastal streams also support a variety of beneficial uses:[32]

- Little Sycamore Canyon Creek in southern Ventura County (warm freshwater habitat; wildlife habitat; rare, threatened or endangered species; and spawning and reproduction);
- Lake Casitas tributaries (warm freshwater habitat; cold freshwater habitat; wildlife habitat; rare, threatened or endangered species; spawning and reproduction; and wetland habitat);
- Javon Canyon and Padre Juan Canyon (warm freshwater habitat; cold freshwater habitat; wildlife habitat; and spawning and reproduction); and
- Los Sauces Creek in northern Ventura County (warm freshwater habitat; cold freshwater habitat; wildlife habitat; migration of aquatic species; and spawning and reproduction).

IV. Conclusion

In order to protect the biological habitat, physical integrity, and other beneficial uses of the water bodies in Ventura County, effective impervious area should be capped at no more than three percent.

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[25] Basin Plan, pp. 1-16, 1-18.
[26] Basin Plan, Table 2-4.
[27] Ventura County Watershed Protection District, *Report of Waste Discharge* (January 2005) at p. 3.
[28] Basin Plan, p. 1-18.
[29] Basin Plan, Table 2-1.
[30] Basin Plan, pp. 1-16, 1-18.
[31] Ventura County Watershed Protection District, *Report of Waste Discharge* (January 2005) at p. 3.
[32] Basin Plan, Table 2-1.

ATTACHMENT B

POLLUTANT CONCENTRATIONS FOR URBAN SOURCE AREAS (HERRERA ENVIRONMENTAL CONSULTANTS, INC. UNDATED)

Source Area	Study	Location	Sample Size (n)	TSS (mg/L)	TCu (ug/L)	TPb (ug/L)	TZn (ug/L)	TP (mg/L)	Notes
Roofs									
Residential	Steuer, et al. 1997	MI	12	36	7	25	201	0.06	2
Residential	Bannerman, et al. 1993	WI	~48	27	15	21	149	0.15	3
Residential	Waschbusch, et al. 2000	WI	25	15	n.a.	n.a.	n.a.	0.07	3
Residential	FAR 2003	NY		*19*	*20*	*21*	*312*	*0.11*	4
Residential	Gromaire, et al. 2001	France		*29*	*37*	*493*	*3422*	*n.a.*	5
Representative Residential Roof Values				**25**	**13**	**22**	**159**	**0.11**	
Commercial	Steuer, et al. 1997	MI	12	24	20	48	215	0.09	2
Commercial	Bannerman, et al. 1993	WI	~16	15	9	9	330	0.20	3
Commercial	Waschbusch, et al. 2000	WI	25	18	n.a.	n.a.	n.a.	0.13	3
Representative Commercial Roof Values				**18**	**14**	**26**	**281**	**0.14**	
Parking Areas									
Res. Driveways	Steuer, et al. 1997	MI	12	157	34	52	148	0.35	2
Res. Driveways	Bannerman, et al. 1993	WI	~32	173	17	17	107	1.16	3
Res. Driveways	Waschbusch, et al. 2000	WI	25	34	n.a.	n.a.	n.a.	0.18	3
Driveway	FAR 2003	NY		*173*	*17*		*107*	*0.56*	4
Representative Residential Driveway Values				**120**	**22**	**27**	**118**	**0.66**	
Comm./ Inst. Park. Areas	Pitt, et al. 1995	AL	16	110	116	46	110	n.a.	1
Comm. Park. Areas	Steuer, et al. 1997	MI	12	110	22	40	178	0.2	2
Com. Park. Lot	Bannerman, et al. 1993	WI	5	58	15	22	178	0.19	3
Parking Lot	Waschbusch, et al. 2000	WI	25	51	n.a.	n.a.	n.a.	0.1	3
Parking Lot	Tiefenthaler, et al. 2001	CA	5	36	28	45	293	n.a.	6
Loading Docks	Pitt, et al. 1995	AL	3	40	22	55	55	n.a.	1
Highway Rest Areas	CalTrans 2003	CA	53	*63*	*16*	*8*	*142*	*0.47*	7
Park and Ride Facilities	CalTrans 2003	CA	179	*69*	*17*	*10*	*154*	*0.33*	7
Comm./ Res. Parking	FAR 2003	NY		*27*	*51*	*28*	*139*	*0.15*	4
Representative Parking Area/Lot Values				**75**	**36**	**26**	**97**	**0.14**	

Landscaping/Lawns									
Landscaped Areas	Pitt, et al. 1995	AL	6	33	81	24	230	n.a.	1
Landscaping	FAR 2003	NY		*37*	*94*	*29*	*263*	n.a.	4
Representative Landscaping Values				**33**	**81**	**24**	**230**	**n.a.**	
Lawns - Residential	Steuer, et al. 1997	MI	12	262	n.a.	n.a.	n.a.	2.33	2
Lawns - Residential	Bannerman, et al. 1993	WI	~30	397	13	n.a.	59	2.67	3
Lawns	Waschbusch, et al. 2000	WI	25	59	n.a.	n.a.	n.a.	0.79	3
Lawns	Waschbusch, et al. 2000	WI	25	122	n.a.	n.a.	n.a.	1.61	3
Lawns - Fertilized	USGS 2002	WI	58	n.a.	n.a.	n.a.	n.a.	2.57	3
Lawns - Non-P Fertilized	USGS 2002	WI	38	n.a.	n.a.	n.a.	n.a.	1.89	3
Lawns - Unfertilized	USGS 2002	WI	19	n.a.	n.a.	n.a.	n.a.	1.73	3
Lawns	FAR 2003	NY	3	*602*	*17*	*17*	*50*	*2.1*	4
Representative Lawn Values				**213**	**13**	**n.a.**	**59**	**2.04**	

Notes:

Representative values are weighted means of collected data. Italicized values were omitted from these calculations.

1 - Grab samples from residential, commercial/institutional, and industrial rooftops. Values represent mean of DETECTED concentrations

2 - Flow-weighted composite samples, geometric mean concentrations

3 - Geometric mean concentrations

4 - Citation appears to be erroneous - original source of data is unknown. Not used to calculate representative value

5 - Median concentrations. Not used to calculate representative values due to site location and variation from other values.

6 - Mean concentrations from simulated rainfall study

7 - Mean concentrations. Not used to calculate representative values due to transportation nature of land use.

NRDC REQUESTED CHANGES TO LOW IMPACT DEVELOPMENT SECTION OF DRAFT PERMIT

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STATE OF CALIFORNIA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER 07-xxx
NPDES PERMIT NO. CAS004002
WASTE DISCHARGE REQUIREMENTS
FOR
STORM WATER DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEM WITHIN THE VENTURA COUNTY WATERSHED PROTECTION DISTRICT, COUNTY OF VENTURA AND THE INCORPORATED CITIES THEREIN.

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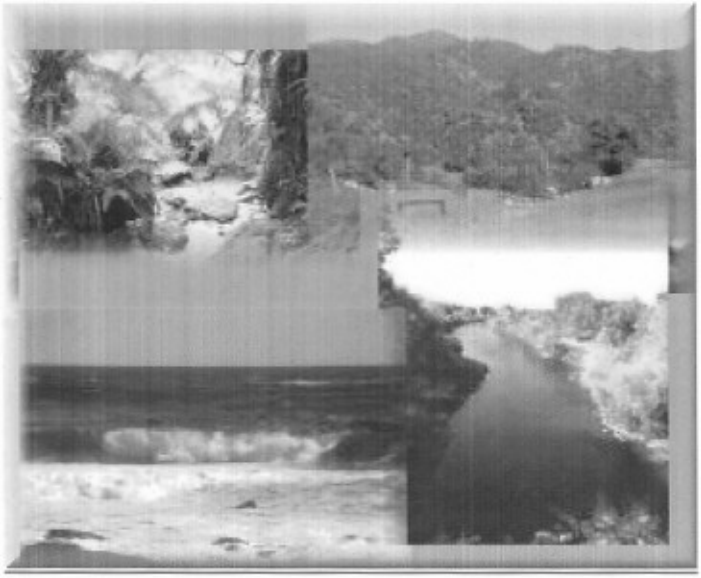

December 27, 2006

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STATE OF CALIFORNIA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER 06-xxx
NPDES PERMIT NO. CAS004002
WASTE DISCHARGE REQUIREMENTS
FOR
STORM WATER DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEM WITHIN THE VENTURA COUNTY WATERSHED PROTECTION DISTRICT, COUNTY OF VENTURA AND THE INCORPORATED CITIES THEREIN.

FINDINGS

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter called Regional Water Board), finds that:

A. Permit Parties and History

1. Ventura County Watershed Protection District (Principal Permittee), County of Ventura, Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventrura, Santa Paula, Simi Valley and Thousand Oaks (hereinafter referred to separately as Permittees) have joined together to form the Ventura Countywide Storm Water Quality Management Program to discharge wastes. The Permittees discharge or contribute to discharges of storm water from municipal separate storm sewer systems (MS4s), also called storm drain systems, into the Watershed Management Areas of Ventura River, Santa Clara River, Calleguas Creek, Malibu Creek and Miscellaneous Ventura Coastal all within Ventura County and Los Angeles County (see Attachment "A").

2. Storm water discharges from the Ventura County MS4 are covered under countywide waste discharge requirements contained in Order No. 00-108, adopted by the California Water Quality Control Board, Los Angeles Region (Regional Water Board) on July 27, 2000, which replaced Order No. 94-082, adopted by the Regional Water Board on August 22, 1994. Order No. 00-108 also serves as a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of municipal storm water.

3. The Regional Water Board may require a separate NPDES permit for any entity that discharges storm water into the watersheds of Ventura County. Such an entity can be any State or Federal facility, special district or other public or private party.

B. Nature of Discharge

1. Storm water discharges consist of surface water runoff generated from various land uses in all the hydrologic drainage basins, which discharge into Waters of the State. The quality of these discharges varies and is affected by geology, land use, season, hydrology, and sequence and duration of hydrologic events. Based on the Ventura Countywide Storm Water Monitoring Program's Water Quality Monitoring Reports which were required under Order No. 00-108, the wet weather Pollutants of Concern (POC) include bacteria, conventional pollutants, metals, nutrients, organic compounds, and pesticides. The POC are identified in Attachment "B" of this Order.

2. Common pollutants in storm water and their respective sources are: bacteria from animal droppings; Polycyclic Aromatic Hydrocarbons (PAHs) from the products of internal combustion engine operation and parking lot sealants wash off; nitrates from fertilizer application; pesticides from pest mitigating applications; herbicides from plant mitigating applications; bis (2-ethylhexyl) phthalate from the break down of plastic products; mercury from atmospheric fallout and improper disposal of mercury switches; lead from fuels, paints, automotive parts; copper from brake pad wear and roofing materials, zinc from tire wear and galvanized sheeting and fencing; sediment from land disturbance and erosion; and dioxins as products of combustion.

3. The implementation of the measures set forth in this Order are reasonably expected to reduce the discharge of pollutants via storm water runoff into receiving waters, and to meet the Waste Load Allocations (WLAs) for municipal storm water adopted by the Regional Water Board.

4. In general, the substances that are found in municipal storm water runoff can harm human health and aquatic ecosystems. In addition, the high volumes and high velocities of storm water discharged from MS4s into natural watercourses can adversely impact aquatic ecosystems and stream habitat and cause stream bank erosion and physical modifications collectively termed hydromodification. Municipal point source discharges from urbanized areas remain a leading cause of impairment of surface waters in California (2002 National Assessment Database, http://www.epa.gov/waters/305b/index.html and State Water Resources Control Board (State Board) 2002 CWA § 305(b) Report http://www.waterboards.ca.gov/tmdl/305b.html).

5. Water quality assessments conducted by the Regional Water Board identified impairments, or threatened impairments, of beneficial uses of water bodies in the Ventura Watersheds. These impairments include many of the POC identified by the Ventura Countywide Storm Water Monitoring Program. These impairments are

identified on the Federal Clean Water Act (CWA) § 303(d) list of impaired water bodies.

6. Studies and research conducted by other Regional agencies, and academic institutions have also identified storm water urban runoff as significant sources of pollutants to surface waters in Southern California. See, e.g., [*Surface Runoff to the Southern California Bight,* Southern California Coastal Water Research Project, (1992); *Impacts of Urban Runoff on Santa Monica Bay and Surrounding Ocean Waters* (Gersberg, R.M., 1995); *State of the Bay 1998*, Santa Monica Bay Restoration Project; *Storm Water Impact, in, Southern California Environmental Report Card 1999 and 2004*, Institute of the Environment, University of California, Los Angeles (Stenstrom, M.S., 1999, 2004); *Distribution of Anthropogenic and Natural Debris on the Mainland Shelf of Southern California Bight*, Shelly L. Moore and M. James Allen (1999); *The Health Effects of Swimming in Ocean Water Contaminated by Storm Drain Runoff*, Haile, R.W. et al. (1999); *Huntington Beach Closure Investigation: Technical Review* (University of Southern California, 2000); *A Regional Survey of the Microbiological Water Quality Along the Shoreline of the Southern California Bight,* Rachel T. Novle et al. (2001); *Integrated Receiving Water Impacts Report (1994-2000)*, County of Los Angeles (2001); Receiving Water Impacts Associated with Urban Runoff, Pitt, R.(2002).]

7. Development and urbanization increase pollutant loads, volume, and discharge velocity. First, natural vegetated pervious ground cover is converted to impervious surfaces (paved) such as highways, streets, rooftops and parking lots. Natural vegetated soil can both absorb rainwater and remove pollutants providing an effective natural purification process. In contrast, impervious surfaces (pavement and concrete) can neither absorb water nor remove pollutants, and thus the natural purification characteristics are lost. Second, urban development creates new pollution sources as the increased density of human population brings proportionately higher levels of vehicle emissions, vehicle maintenance wastes, municipal sewage waste, pesticides, household hazardous wastes, pet wastes, trash, and other anthropogenic pollutants. Development and urbanization especially threaten environmentally sensitive areas. Such areas have a much lower capacity to withstand pollutant shocks than might be acceptable in the general circumstance. In essence, development that is ordinarily insignificant in its impact on the environment may in a particular sensitive environment become significant. These environmentally sensitive areas (ESAs) designated by the State include:

   (a) Regional Water Board's areas listed in the Basin Plan as supporting the "Rare, Threatened, or Endangered Species (RARE)" Beneficial Use; and

(b) California Coastal Commission's Environmentally Sensitive Habitat Areas as delineated on maps in Local Coastal Plans (LCPs).

8. Ventura County has several stream segments listed on the CWA § 303(d) list of impaired water bodies for various pollutants/stressors. The California Stream Bioassessment Procedure (CSBP) is a cost-effective tool and standard protocol for assessing the biological and physical/habitat conditions of stream segments for evaluation of the overall health of the watershed. [References: Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling, 1999. *Rapid Bioassessment Protocols for use in Streams and Rivers: Periphyton, Benthic, Macroinvertebrates, and Fish*. 2nd Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C., California State Water Resources Control Board - Division of Water Quality, (2003). *The Status and Future of Biological Assessment for California Streams*. Southern CA Coastal Water Research Project, CA Department of Fish and Game, (2005*). Bioassessment In Low Gradient Streams Quality Assurance Project Plan.* California Department of Fish and Game, (2005*). California Stream Bioassessment Procedure (CSBP) for Measuring Basic Characterization of Stream Habitat and Sampling Benthic Macroinvertebrates.* Ode, P. et al, (2005). *A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams*.] This Order includes requirements to conduct bioassessments of natural streams and waterways.

9. The Ventura Watershed stream segments listed on the CWA § 303(d) list of impaired water bodies have polluted and/or disturbed ecosystems that can be assessed to evaluate their potential for ecological restoration. The purpose of restoration is to reestablish insofar as possible the ecological integrity of degraded aquatic ecosystems. Ecological integrity refers to the condition of an ecosystem, particularly the structure, composition, and natural processes of its biotic communities and physical environment. Restoration strives for the greatest progress toward ecological integrity achievable within the current limits of the watershed. [References: U.S. EPA, 2000. *Principles for the Ecological Restoration of Aquatic Resources*. EPA841-F-00-003. Office of Water (4501F) United States Environmental Protection Agency, Washington, DC. 4 pp., the Federal Interagency Stream Restoration Working Group, (2001). *Stream Corridor Restoration: Principles, Processes, and Practices*.] This Order includes requirements to conduct restoration planning.

10. The increased volume, increased velocity, and discharge duration of storm water runoff from developed areas has the potential to greatly accelerate downstream erosion and impair stream habitat in natural drainages. Studies have demonstrated a direct correlation between the degree of imperviousness of an area and the degradation of its receiving waters. Significant declines in the biological integrity and physical habitat of streams and other receiving waters have been found to occur

with as little as 3-10 percent conversion from natural to impervious surfaces. Percentage impervious cover is a reliable indicator and predictor of potential water quality degradation expected from new development. [References: *Impervious Cover as An Urban Stream Indicator and a Watershed Management Tool*, Schueler, T. and R. Claytor, In, Effects of Water Development and Management on Aquatic Ecosystems (1995), ASCE, New York; Leopold, L.B., (1973); *River Channel Change with Time: An Example*, Geological Society of America bulletin, v. 84, p. 1845-1860; Hammer, T.R., (1972), *Stream Channel Enlargement Due to Urbanization*: Water Resources Bulletin, v.8, p. 1530-1540; Booth, D.B., (1991), *Urbanization and the Natural Drainage System--Impacts, solutions and Prognoses*: The Northwest Environmental Journal, v. 7, p. 93-118; Klein, R.D., (1979), *Urbanization and Stream Quality Impairment*: Water Resources bulletin, v. 15, p. 948-963; May, C.W., Horner, R.R., Karr, J.R., Mar, B.W., and Welch, E.B., (1997), *Effects of Urbanization on small steams in the Puget Sound Lowland Ecoregion*: Watershed Protection Techniques, v. 2, p. 483-494; Morisawa, M. and LaFlure, E., *Hydraulic geometry, Stream Equilibrium and Urbanization In Rhodes*, D.P. and Williams, G.P. *Adjustments to the Fluvial System* p. 333-350, (1979); Dubuque, Iowa, Kendall/Hunt, Tenth Annual Geomorphology Symposia Series; and *The Importance of Imperviousness*: Watershed Protection Techniques, 1(3), Schueler T. (1994); *Managing Runoff to Protect Natural Streams, The Latest Development and Investigation of Hydromodification in California*, Stein, E.D., and Zaleski, S. (2005); *Effect of Increases in Peak Flows and Imperviousness on the Morphology of Southern California Streams*, Coleman, D, MacRae, C, Stein, E.D. (2005); and *Urbanization and Channel Stability Assessment In The Arroyo Simi Watershed of Ventura County*, Final Report, (2004).]

11. The industries and businesses listed in this Order that are to be inspected by Permittees have the potential to discharge contaminated runoff into the MS4, this runoff is an environmental threat because it can adversely impact public health and safety, and the quality of receiving waters. For example, pretreatment program compliance inspections and audits performed in the Los Angeles and Ventura Counties indicate that automotive service and food service facilities sometimes discharge-polluted runoff to the MS4s. The POCs in such wash waters include oil and grease, toxic chemicals, and food waste. Spills from clogged sanitary sewer lines have a high likelihood to reach the receiving waters via MS4s. Overall, the most common POC identified in runoff discharging to the MS4s are: (i) heavy metals, (ii) oil and grease/PAHs, (iii) sediments, (iv) oxygen demanding substances, (v) litter/trash/debris, (vi) nutrients, (vii) other toxic materials, such as pesticides (*Research Report on Issues, Pollutants and Materials for the Stormwater/Urban Runoff Public Education Program*. Prepared for the Los Angeles County Department of Public Works and submitted to the Regional Water Board in July 1997; *The Critical Source Selection and Monitoring Report*- Woodward-Clyde Consultants

prepared for the Los Angeles County Department of Public Works and submitted to the Regional Water Board in July 1997). Municipal storm water monitoring data and industrial storm water monitoring data indicate that industrial and commercial sites continue to contribute significant quantities of pollutants in storm water runoff. [References: Ventura County Monitoring Program Report, (2005-2006), *Storm Water Industrial Activities Sampling Program Evaluation in California,* M. Stenstrom and H. Lee, January 2005, http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/lams4Documents.html, *Evaluation of Urban Non-Point Source Runoff of Hazardous Metals Entering Santa Monica Bay, California,* M.S. Buffleben et all, in *Water Science and Technology 2002.* Other studies performed in California also point to the threat of pollution created by nonstorm water discharges to storm drains including discharges of washwaters during dry and wet weather (*Water Quality Concerns and Regulatory Controls for Nonstorm Water Discharges to Storm Drains*, L.D. Duke and M.M. Kihara, Journal of the American Water Resources Association, June 1998.]

12. Rising groundwater and swimming pool water have been found to be sources of pollutants such as salts. Salts increase the salinity of otherwise freshwater systems and disrupt physiological processes. This Regional Water Board has adopted Basin Plan amendments to include TMDLs for salts and this Order includes provisions to control the discharges from these activities in order to directly or indirectly reduce or eliminate the discharge of salts to fresh water systems where salts may impair water quality and beneficial uses.

13. Studies indicate that facilities with paved surfaces subject to frequent motor vehicular traffic (such as: strip malls, parking lots, commercial business parks, and fast food restaurants), or facilities that perform vehicle repair, maintenance, or fueling (automotive service facilities) are potential sources of POC in storm water. [References: Pitt et al., *Urban Storm Water Toxic Pollutants:* Action Plan Demonstration Project, *Demonstration of Gasoline Fueling Station Best Management Practices*, Final Report, County of Sacramento (1993); Results of Retail Gas Outlet and Commercial Parking Lot Storm Water Runoff Study, Western States Petroleum Institute, (1994); *Assessment, Sources, and Treatability*, Water Environment Res., 67, 260 (1995); *Industrial Storm Water Pollution Prevention: Effectiveness and Limitations of Source Controls in the Transportation Industry*, L. Donald Duke and Y. Jae Chung, Waste Management, Vol. 15, No. 8, pp. 543-558 (1996); Source Characterization, R. Pitt, In Innovative Urban Wet-Weather Flow Management Systems (2000); Technomic Press, Field, R et al. Editors; *First Flush Storm Water Runoff from Highways,* M.K. Stenstrom et al. (2000); *Characteristics of Parking Lot Runoff Produced by Simulated Rainfall*, L.L. Tiefenthaler et at. Technical Report 343, Southern California Coastal Water Research Project (2001); California Storm Water BMP Handbook Municipal, (January 2003); Kayhanian K. Singh A., Suverkropp C.,

Borroum S., (November 2003). *Impact of Annual Average Daly Traffic On Highway Runoff Pollutant Concentrations*. J.Envir. Engrg., Volume 129, Issue 11, pp. 975-990. *Metals and PAHs Adsorbed to Street Particles,* Sim-Lin Lau and Michael K. Stenstrom (2005).]

14. Retail Gasoline Outlets (RGOs) are points of convergence for vehicular traffic and are similar to parking lots and urban roads. Studies indicate that storm water discharges from RGOs have high concentrations of hydrocarbons and heavy metals. [References: *The Quality of Trapped Sediments and Poor Water within Oil Grit Separators in Suburban*, MD, Schueler T. and Shepp D. (1992), and *Concentration of Selected Constituents in Runoff from Impervious Surfaces in Four Urban Catchments of Different Landuse*, Ranabal, F.I. and T.J. Bizzard (1995). In Proceedings of the Fourth Biennial Storm Water Research Conference, Florida, pp. 42-52].*Retail Gasoline Outlets: New Development Design Standards for Mitigation of Storm Water Impacts*, (June 2001); *Supplement to Retail Gasoline Outlet Report* (December 2001); *Review of Storm Water Quality Task Force BMP Guide for Retail Gasoline Outlets* (November 2001).]

15. The Regional Water Board adopted a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R4-2005-0080) on November 3, 2005. The objective of the program is to monitor runoff from irrigated agriculture facilities in the coastal watersheds of Los Angeles and Ventura Counties. The Regional Water Board's Basin Plan, which designates beneficial uses and establishes water quality objectives for the Region, recognizes that agricultural activities can generate pollutants such as sediment, pesticides, herbicides, and nutrients that upon discharge to receiving water, can degrade water quality and impair beneficial uses. A category identified by the Conditional Waiver as a source of pollutants is nursery operations. This Order includes requirements for the municipal operator to insure the implementation of pollutant reduction and control measures at nursery operations, with the objective of reducing pollutants in storm water runoff within their jurisdiction.

16. Research conducted on the contribution of aerial deposition of trace heavy metals in Los Angeles County watersheds indicates that dry indirect deposition may account for a significant load of pollutants into surface waters. Similar patterns of aerial deposition likely occur in Ventura County. Of the atmospherically deposited pollutants on the watersheds, ten to twenty percent may account for the total load for copper, zinc, nickel, lead, and chromium to the water bodies. Land reservoirs and sequestration may account for the remaining ninety to eighty percent of the atmospherically deposited pollutants on the watersheds. Emissions of semi-volatile organics such as polycyclic aromatic hydrocarbons (PAHs) and pesticides and their subsequent deposition may contribute to the contamination of receiving waters but

appear to be less significant (*Atmospheric Dry Deposition of Trace Metals in the Los Angeles Coastal Region*, L.D. Sabine et al (2005) SCCWRP AR pp. 50-60; *Atmospheric Concentration of PAH, Pesticides, and other Semi-volatile Organic Compounds in the Los Angeles Coastal Region*, L.D. Sabin et al (2005) pp. 61-72; *Contribution of Trace Metals from Atmospheric Deposition to Stormwater Runoff in a Small Impervious Urban Catchmen*t, Sabin et al., Water Research 39 (2005) 3929-3937; *Measuring and Modeling of Atmospheric Deposition on Santa Monica Bay and the Santa Monica Bay Watershed*, K.D. Stolzenbach et al. (2001). The Los Angeles Regional Water Board will coordinate with the South Coast Air Quality Management Districts, the California Air Resources Board, and other governmental agencies to address multimedia sources of pollution that may contribute to pollution of surface waters.

17. Trash and debris are pervasive pollutants which accumulate in streams, rivers, bays, and ocean beaches throughout Southern California. It poses a serious threat to our oceans and coasts, navigation, biological resources, recreation, human health and safety, aesthetics and economies.
[References: Moore, S.L., Gregorio D., Carreon, M., Weisberg, S.B., and Leecaster, M.K., (2001). *Composition and Distribution of Beach Debris in Orange County, California.* Marine Pollution Bulletin, 42(3), pp. 241-245. *Los Angeles River Watershed Total Maximum Daily Loads for Trash*, Staff Report, (2001). (September, 2005). *2005 Plastic Debris, Rivers to Sea Conference.*]

18. Nitrite and nitrate (NH3) are biostimulatory substances that can cause or contribute to eutrophic effects such as low dissolved oxygen and algae growth impairing warm freshwater and wildlife habitats. NH3 is highly toxic to fish and other aquatic life. Excessive ammonia can cause aquatic life toxicity. [References: *California 2002 303(d) list of water quality limited segments*, (February 4, 2003); *Santa Clara River Total Maximum Daily Loads for Nitrogen Compounds*, Staff Report (2003).]

19. Pesticides are substances used to prevent, destroy, repel or mitigate any pest ranging from insects, animals and weeds to microorganisms. Their effects can be direct (e.g. fish die from a pesticide entering waterways, or birds do not reproduce after ingesting contaminated fish), or indirect (a hawk becomes sick from eating a mouse dying from pesticide poisoning). Pesticide categories include: Organochlorine, Organophosphorus, Organophosphate, and Pyrethroid. [References: *Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides*; Weston, D.P., Holmes, R.W., You, J., Lydy, M.J. Environ. Sci. Technol.; (Article); 39(24); pp. 9778-9784 (2005); Bioavailability of Pyrethroids in Surface Aquatic Systems; Gan, J., Yang,W., Bondarenko,S., Spurlock,F. (Presentation at CA Department of Pesticide Regulation) (2005); *Pesticides in the Nation's Streams and Ground Water, 1992-2001*; Gilliom, R.J.; Barbash J.E.; Crawford C.G.; Hamilton, P.A.; Martin, J.D.; Nakagaki, N.;

Nowell, L.H.; Scott, J.C., Stackelberg, P.E.; Thelin, G.P.; Wolock, D.M. USGS Circular 129; 2006; *Calleguas Creek, its Tributaries and Mugu Lagoon Total Maximum Daily Loads for Organochlorine (OC) Pesticides, Polychlorinated Byphenyls (PCB) and Siltation*, Staff Report, (2006); *Calleguas Creek, its Tributaries and Mugu Lagoon Total Maximum Daily Loads for Toxicity, Chlorpyrifos and Diazinon*, Staff Report, (2006); U.S. EPA, *Permethrin, Resmethrin, Sumithrin: Synthetic Pyrethroids For Mosquito Control*,
URL: http://www.epa.gov/ pesticides/health/mosquitoes/pyrethroids4 mosquitoes.htm; U.S. EPA, *Chlorpyrifos Summary*,
URL: http://www.epa.gov/ oppsrrd1/op/chlorpyrifos/summary.htm;
U.S. EPA, *Diazinon Summary*,
URL: http://www.epa.gov/ pesticides/op/diazinon/ summary.htm.]

20. Polychlorinated Byphenyls (PCBs) are a subset of the synthetic organic chemicals known as chlorinated hydrocarbons. Concern over PCBs toxicity, persistence (chemical stability) in the environment and that they have been shown to bioconcentrate significantly in aquatic organisms has led to prohibitions on PCBs. [References: *Calleguas Creek, its Tributaries and Mugu Lagoon Total Maximum Daily Loads for Organochlorine (OC) Pesticides, Polychlorinated Byphenyls (PCB) and Siltation*, Staff Report, (2006); U.S. EPA, Technical Factsheet on: Polychlorinated Biphenyls (PCBs),
URL: http://www.epa.gov/OGWDW/dwh/t-soc/pcbs.html.

C. Permit Background

1. The essential components of the Storm Water Management Program, as established by the Code of Federal Regulations (CFR) [40 CFR 122.26(d)] are:

   (a) Adequate Legal Authority.
   (b) Fiscal Resources.
   (c) Storm Water Quality Management Program (SMP).
      (1) Public Information and Participation Program.
      (2) Industrial/Commercial Facilities Program.
      (3) Planning and Land Development Program.
      (4) Development Construction Program.
      (5) Public Agency Activities Program.
      (6) Illicit Connection and Illicit Discharges Elimination Program.
   (d) Reporting Program (Monitoring Report and Program Report).

2. The Ventura County SMP, dated November 2001 (revision 2) identifies seven program areas, which are listed below and were previously approved under Board Order No. 00-108.
   (a) Ventura County SMP

(1) Program Management.
(2) Programs for Residents.
(3) Programs for Industrial/Commercial Businesses.
(4) Programs for Planning and Land Development.
(5) Programs for Construction Sites.
(6) Programs for Public Agency Activities.
(7) Programs for Illicit Connections/Illegal Discharges.

For purposes of region-wide consistency, the program titles are revised and consolidated into the six areas listed in the preceding C.1(c). All Permittee storm water documents submitted to the Regional Water Board are to follow the organization enumerated in C.1(c).

3. The Permittees filed a Report of Waste Discharge (ROWD), dated January 26, 2005. The Permittees applied for renewal of their waste discharge requirements for a 5-year period, which serves as an NPDES permit to discharge wastes to surface waters.

4. The Regional Water Board reviewed the ROWD and determined it to be partially complete under the reapplication policy for MS4s issued by the United States Environmental Protection Agency (REGIONAL WATER BOARD) (61 Fed. Reg. 41697). The Regional Water Board has prepared this Order so that implementation of provisions contained in this Order by Permittees will meet the requirements of the federal NPDES regulations at 40 CFR 122.26.

5. To-date, the monitoring program has consisted of mass emission, receiving water (tributaries), and land-use monitoring stations, toxicity testing, special studies for bio-assessment of the Ventura River and hydrology, identification of ESAs, implementation of the Storm Water Quality Urban Impact Mitigation Plan (SQUIMP), and provide support for volunteer monitoring programs. This Order requires a monitoring program consisting of mass emission, and tributary station(s), toxicity and total suspended solids (TSS) testing, wet weather MS4 WLA monitoring, bio-assessment of the Ventura River, Santa Clara River and Calleguas Creek, trash and debris study, a Pyrethroid assessment, continuation of the hydromodification study, low impact development study, participation in the Southern California Bight Project (SCBP), and support volunteer of monitoring programs.

6. The Principal Permittee is a member of the Southern California Coastal Water Research Project (SCCWRP) Commission. The Principal Permittee also participates in the Regional Monitoring Programs and research partnerships, such as the Southern California Storm Water Monitoring Coalition (SMC) and the Bioassessment Working Group.

D. Permit Coverage

1. The area covered by this Order includes all areas within Ventura County boundaries and all areas within the Municipalities' boundaries (see Figure 1) that are within the Regional Water Board's jurisdiction except for agricultural lands and forest lands. Storm water runoff in these areas are discharged to the watercourses covered by this Order (see Attachment "A"). Provisions of this Order apply to the urbanized areas of the municipalities, areas undergoing urbanization and areas which the Regional Water Board Executive Officer determines are discharging storm water that causes or contributes to a violation of a water quality standard or is a significant contributor of pollutants to the waters of the United States pursuant to CWA § 402(p)(2)(E).

2. The Permittees covered under this Order were designated on a system-wide basis under Phase I of the CWA § 402(p)(3)(B)(i). The action of covering all Ventura County municipalities under a single MS4 permit on a system-wide basis was consistent with the provisions of 40 CFR 122.26(a)(3)(iv), which states that one permit application may be submitted for all or a portion of all municipal separate storm sewers within adjacent or interconnected large or medium municipal separate storm sewer systems; and the Regional Water Board may issue one system-wide permit covering all, or a portion of all municipal separate storm sewers in adjacent or interconnected large or medium municipal separate storm sewer systems.

3. Federal, State, Regional, or local entities within the Permittees' boundaries or in jurisdictions outside the Ventura County Watershed Protection District, and not currently named in this Order, may operate storm drain facilities and/or discharge storm water to storm drains and watercourses covered by this Order. The Permittees may lack legal jurisdiction over these entities under State and Federal constitutions. The Regional Water Board will work with these entities to ensure the implementation of programs that are consistent with the requirements of this Order.

4. This Order incorporates the MS4 TMDLs' WLAs adopted by the Regional Water Board as required under CWA § 303 (d). This order incorporates default WLA monitoring requirements, or where approved, TMDL Implementation Plan Monitoring Program requirements to verify compliance with the adopted TMDL WLAs.

5. Permittees are to work cooperatively to control the contribution of pollutants from one portion of the MS4 to another portion of the system through inter-agency agreements or other formal arrangements.

E. Federal, State and Regional Regulations

1. The Water Quality Act of 1987 added § 402(p) to the CWA (33U.S.C. § 1251-1387). This section requires the U.S. EPA to establish regulations setting forth NPDES requirements for storm water discharges in 2 phases.

   (a) U.S. EPA Phase I storm water regulations were directed at MS4s serving a population of 100,000 or more, including interconnected systems and storm water discharges associated with industrial activities, including construction activities. The Phase 1 Final Rule was published on November 16, 1990 (55 Fed. Reg. 47990).

   (b) U.S. EPA Phase II storm water regulations are directed at storm water discharges not covered in Phase I, including small MS4s (population of less than 100,000), small construction projects (less than 5 acres), municipal facilities with delayed coverage under the Intermodal Surface Transportation Efficiency Act of 1991, and other discharges for which the U.S. EPA Administrator or the State determines that the storm water discharge contributes to a violation of a water quality standard, or is a significant contributor of pollutants to waters of the US. The Phase II Final Rule was published on December 8, 1999 (64 Fed. Reg. 68722).

2. The U.S. EPA published an 'Interpretative Policy Memorandum on Reapplication Requirements for MS4 permits on August 9, 1996 (61 Fed. Reg. 41697). This policy requires that MS4 reapplication for reissuance for a subsequent five-year permit term contains certain basic information and information for proposed changes and improvements to the storm water management program and monitoring program.

3. The U.S. EPA has entered into a Memorandum of Agreement (MOA) with the US Fish and Wildlife Service, and the National Marine Fisheries Service for enhancing coordination regarding the protection of endangered and threatened species under Section 7 of the Endangered Species Act, and the CWA's water quality standards and NPDES programs. Among other actions, the MOA establishes a framework for coordination of actions by the U.S. EPA, the Services, and CWA delegated States on CWA permit issuance under § 402 of the CWA [66 Fed. Reg. 11202-11217].

4. The CWA allows the U.S. EPA to delegate its NPDES permitting authority to states with an approved environmental regulatory program. The State of California is a delegated State. The Porter-Cologne Water Quality Control Act (California Water Code- CAL. WATER CODE) authorizes the State Water Resources Control Board (State Water Board), through the Regional Water Boards, to regulate and control the discharge of pollutants into waters of the State and tributaries thereto.

5. The State Water Board submits a report (a list of water quality limited segments (§ 303[d] list)) on the State's water quality to the U.S. EPA pursuant to § 305(b) of the 1972 CWA, and Title 40, CFR § 130.7, every 2 years. The Report provides water quality information to the general public and serves as the basis for U.S. EPA's National Water Quality Inventory Report to Congress. Title 40 CFR § 130.7(b)(1) provides that waterbodies included on State § 303(d) lists are those waterbodies for which pollution controls required by local, State, or federal authority, including technology-based or more stringent point source effluent limitations or nonpoint source BMPs, are not stringent enough to implement any water quality standard applicable to such waters. Title 40 CFR § 130.7(b)(3) defines "water quality standard applicable to such waters" as "those water quality standards established under § 303 of the [Clean Water] Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements."

6. Under § 303(d) of the CWA, States are required to identify a list of impaired water-bodies and develop and implement Total Maximum Daily Loads (TMDLs) for these waterbodies (33 USC §1313(d)(1)). The most recent 303(d) list was adopted on July, 2003. A TMDL specifies that maximum amount of a pollutant that a water-body can receive, still meet applicable water quality objectives and protect beneficial uses. The U.S. EPA entered into a consent decree with the Natural Resources Defense Council (NRDC), Heal the Bay, and the Santa Monica BayKeeper on March 22, 1999, under which the Regional Water Board must adopt all TMDLs for the Los Angeles Region within 13 years from that date. This Order incorporates a provision to implement and enforce approved WLAs for municipal storm water discharges and requires amending the SMP after pollutant loads have been allocated and approved.

7. Under § 6217(g) of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), US Coastal States with approved coastal zone management programs are required to address non-point pollution impacting or threatening coastal water quality. CZARA addresses five sources of non-point pollution: 1) agriculture; 2) silviculture; 3) urban; 4) marinas; and 5) hydromodification. This Waste Discharge Requirement addresses the management measures required for the hydromodification category and the urban category, with the exception of septic systems.

8. The Regional Water Board addresses septic systems through the administration of non-Chapter 15 regulatory programs and the implementation of Regional Water Board Order No.R4-2004-0146. Septic systems are also addressed under State Assembly Bill (AB) 885 (2000). The Regional Water Board will implement and enforce regulations issued by the State Board pursuant to AB 885. Taken together, these State and Local agency requirements when imposed on septic system operators are expected to reduce the bacterial contamination of storm water from improperly maintained septic systems.

9. On May 18, 2000, the U.S. EPA established numeric criteria for priority toxic pollutants for the State of California (California Toxics Rule (CTR) 65 Fed. Reg. 31682 (40 CFR 131.38) for the protection of human health and aquatic life. These apply as ambient water quality criteria for inland surface waters, enclosed bays and estuaries. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (SIP) - 2000, on March 2, 2000, for implementation of the CTR (State Board Resolution No. 2000-15, as amended by Board Resolution No. 2000-030). This policy requires that discharges comply with TMDL derived load allocations as soon as possible, but no later than 20 years from the effective date of the policy.

10. The State Water Board adopted a revised Water Quality Control Plan for Ocean Waters of California (Ocean Plan) in 2005. The California Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the State's coastal waters. It applies to point and nonpoint source discharges. The Ocean Plan identifies the applicable beneficial uses of marine waters that include preservation and enhancement of designated Areas of Special Biological Significance (ASBS) (now called "State Water Quality Protection Areas") and establishes a set of narrative and numerical water quality objectives designed to protect beneficial uses. The SWRCB adopts the California Ocean Plan, and both the SWRCB and the six coastal Regional Water Quality Control Boards (RWQCBs) implement and interpret the California Ocean Plan.

11. This Regional Water Board adopted a revised Water Quality Control Plan (Basin Plan) for the Los Angeles Region on June 13, 1994. The Basin Plan, which is incorporated into this Order by reference, specifies the beneficial uses of Ventura County water bodies and their tributary streams, and contains both narrative and numerical water quality objectives for these receiving waters. The following beneficial uses identified in the Basin Plan apply to all or portions of each watershed covered by this Order:

    (a) Municipal and domestic supply.
    (b) Agricultural supply.
    (c) Industrial service supply.
    (d) Industrial process supply.
    (e) Ground water recharge.
    (f) Freshwater replenishment.
    (g) Navigation.
    (h) Hydropower generation.
    (i) Water contact recreation.
    (j) Non-contact water recreation.
    (k) Ocean commercial and sport fishing.
    (l) Warm freshwater habitat.

(m) Cold freshwater habitat.
(n) Preservation of Areas of Special Biological Significance.
(o) Saline water habitat.
(p) Wildlife habitat.
(q) Preservation of rare and endangered species.
(r) Marine habitat.
(s) Fish migration.
(t) Fish spawning.
(u) Shellfish harvesting.

12. On March 22, 1999 the Consent Decree in Heal the Bay, Inc.; Santa Monica BayKeeper, Inc. v. Browner, Case No. 98-4825 SBA was approved. Under Establishment of TMDLs- The parties understand that California has the initial opportunity pursuant to § 303(d) of the CWA to adopt and submit to U.S. EPA for approval TMDLs to be established under this Consent Decree. TMDLs developed by Regional Water Boards are adopted as Basin Plan amendments in order to include implementation provisions. The TMDL process follows the procedure below:

(a) Regional Water Board adopts.
(b) State Water Board approves.
(c) Office of Administrative Law approves.
(d) U.S. EPA (Region 9) approves.
(e) State Resources Agency final fee exemption letter.

13. The Regional Water Board has adopted amendments to the Basin Plan, to incorporate TMDLs for the following:

(a) U.S. EPA approved TMDLs with storm water WLAs.
  (1) Santa Clara River and its Tributaries - Nitrogen Compounds.
    (A) Regional Water Board Resolution No. 2003-011.
    (B) State Water Board Resolution No. 2003-0073.
    (C) OAL file No. 04-0123-35.
    (D) U.S. EPA approval date March 18, 2004.
    (E) Final fee exemption date March 23, 2004 (effective date.
    (F) Compliance is 1 year after effective date.

  (2) Malibu Creek and Lagoon - Bacteria.
    (A) Regional Water Board Resolution No. 2004-019.
    (B) State Water Board Resolution No. 2005-0072.
    (C) OAL file No. 05-1018-03 S.
    (D) U.S. EPA approval date January 10, 2006.
    (E) Final fee exemption date January 24, 2006 (effective date).

(F) Compliance for Summer Dry is 3 years after effective date.
(G) Compliance for Winter Dry is 6 years after effective date.

(3) Calleguas Creek, Its Tributaries, and Mugu Lagoon - Toxicity, Chlorpyrifos and Diazinon.
(A) Regional Water Board Resolution No. 2005-009.
(B) State Water Board Resolution No. 2005-0067.
(C) OAL file No. 05-1110-02 S.
(D) U.S. EPA approval date March 14, 2006.
(E) Final fee exemption date March 24, 2006 (effective date).
(F) Compliance for Toxicity and Interim WLA is effective date.
(G) Compliance for Final WLA is 2 years after effective date.

(4) Calleguas Creek, Its Tributaries, and Mugu Lagoon - Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs), and Siltation.
(A) Regional Water Board Resolution No. 2005-010.
(B) State Water Board Resolution No. 2005-0068.
(C) OAL file No. 05-1206-03 S.
(D) U.S. EPA approval date March 14, 2006.
(E) Final fee exemption date March 24, 2006 (effective date).
(F) Compliance for Interim WLA is effective date.

14. The Regional Water Board adopted and approved requirements for new development and significant redevelopment projects in Ventura County to control the discharge of storm water pollutants in post-construction storm water, on January 26, 2000, in Board Resolution No. R-00-02. The Regional Water Board Executive Officer issued the approved Standard Urban Storm Water Mitigation Plans (SUSMPs) on March 8, 2000 for Los Angles County and the Cities in Los Angeles County. Since 2000, new development and redevelopment water quality criteria have been implemented by the Permittees to be consistent with SUSMP. The State Board affirmed the Regional Water Board action and SUSMPs in State Board Order No. WQ 2000-11, issued on October 5, 2000.

(a) A statewide policy memorandum (dated December 26, 2000), which interprets the Order to provide broad discretion to Regional Water Boards and identifies potential future areas for inclusion in SUSMPs and the types of evidence and findings necessary. Such areas include ministerial projects, projects in environmentally sensitive areas, and water quality design criteria for RGOs. The Regional Water Board properly justified the extensions of SUSMPs and water quality criteria to ministerial projects, projects in environmentally sensitive areas, and RGOs, during the adoption of Regional Water Board Order 01-182. The Regional Water Board's action was upheld by the County of Los Angeles

Superior Court (In Re: Los Angeles County Municipal Storm Water Permit Litigation, Lead Case No. BS 080548, Statement of Decision, Superior Court Central Civil West, March 24, 2005).

(b) The State Water Board's Chief Counsel interpreted the Order to encourage regional solutions and endorsed a mitigation fund or "bank" as alternatives for new development and significant redevelopment. The Regional Water Board has included provisions for Regional solutions and the establishment of a mitigation bank in this Order.

15. The Regional Water Board supports Watershed Management planning to address water quality protection in the region. The objective of the Watershed Management planning is to provide a comprehensive and integrated strategy towards water resource protection, enhancement, and restoration while balancing economic and environmental impacts within a hydrologically defined drainage basin or watershed. It emphasizes cooperative relationships between regulatory agencies, the regulated community, environmental groups, and other stakeholders in the watershed to achieve the greatest environmental improvements with available resources.

16. To facilitate compliance with federal regulations, the State Board has issued the following 4 Statewide General NPDES Permits associated with storm water:

(a) Industrial General Permit (IASGP- Industrial Activities Storm Water General Permit), NPDES No. CAS000001, issued on November 19, 1991, reissued on September 17, 1992 and April 17, 1997, currently under review for reissuance.
(b) Construction General Permit (CASGP- Construction Activities Storm Water General Permit), NPDES No. CAS000002, issued on August 20, 1992, reissued August 19, 1999, currently under review for reissuance.
(c) Small Linear Underground/Overhead Construction Projects General Permit (small LUPs), NPDES No. CAS000005, issued on June 18, 2003.
(d) Small MS4 Permit WQ Order No. 2003-0005-DWQ adopted on April 30, 2003.

17. Facilities discharging storm water associated with industrial activities, construction projects that disturb 1 or more acres of soil, or construction projects that disturb less than 1 acre but are part of a larger common plan of development or sale that in total disturbs 1 or more acres, and construction activities associated with small linear underground/overhead projects that result in land disturbances greater than one acre, but less than five acres (small LUPs), are all required to obtain individual NPDES permits for storm water discharges, or be covered by the statewide General Permits by completing and filing a Notice of Intent (NOI) with the State Board. The U.S. EPA guidance anticipates coordination of the state-administered programs for industrial and construction activities with the local agency program to reduce pollutants in storm water discharges to the MS4.

18. State Water Board Resolution No. 68-16 contains the state Antidegradation Policy, titled "Statement of Policy with Respect to Maintaining High Quality Waters in California (Resolution 68-16), applies to all waters of the state, including ground waters of the state, whose quality meets or exceeds (is better than) water quality objectives. Resolution No. 68-16 incorporates the federal Antidegradation Policy (40 CFR Section 131.12) where the federal policy applies, (State Water Board Order WQO 86-17). Both, state and federal antidegradation policies acknowledge that an activity that results in a minor water quality lowering, even if incrementally small, can result in violation of Antidegradation Policies through cumulative effects, for example, when the waste is a cumulative, persistent, or bioaccumulative pollutant.

    (a) State Water Board Resolution No. 68-16 establishes essentially a 2-step process for compliance with the policy.
        (1) Step 1- if a discharge will degrade high quality water, the discharge may be allowed if any change in water quality:
            (A) Will be consistent with maximum benefit to the people of the State.
            (B) Will not unreasonably affect present and anticipated beneficial use of such water.
            (C) Will not result in water quality less than that prescribed in state policies (e.g., water quality objectives in Water Quality Control Plans).
        (2) Step 2- any activities that result in discharges to high quality waters are required to:
            (A) Meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to avoid a pollution or nuisance.
            (B) Maintain the highest water quality consistent with the maximum benefit to the people of the State.
                (i) If such treatment or control results in a discharge that maintains the existing water quality, then a lowering of water quality would not be consistent with state Antidegradation Policy.
                (ii) Likewise, the discharge could not be allowed under state Antidegradation Policy if:
                    (I) The discharge, even after treatment, would unreasonably affect beneficial uses; or
                    (II) The discharge, would not comply with applicable provisions of Water Quality Control Plans.

19. The Hydromodification Control and Low Impact Development (LID) provisions of this Order are intended to promote the State Water Board and federal Antidegradation policies by preventing water quality and habitat (beneficial) degradation.

20. The State Water Board on June 17, 1999, adopted Order No. WQ 99-05, which specifies standard receiving water limitation language to be included in all municipal storm water permits issued by the State and Regional Water Boards.

21. Cal. Water Code § 13263(a) requires that waste discharge requirements issued by Water Boards shall implement any relevant water quality control plans that have been adopted; shall take into consideration the beneficial uses to be protected and the water quality objectives reasonably required for that purpose; other waste discharges; and the need to prevent nuisance.

22. Cal. Water Code § 13370 et. seq. requires that waste discharge requirements issued by the Water Boards implement the provisions of the CWA (33 U.S.C. Sec. 1251 et seq.) and acts amendatory thereof or supplementary thereto, and federal regulations and guidelines issued pursuant thereto.

23. On March 12, 2001, the U.S. Court of Appeals ruled that it is necessary to obtain a NPDES permit for application of aquatic pesticides to waterways (Headwaters, Inc. vs. Talent Irrigation District, 243 F.3rd. 526 (9th Cir., 2001)). The U.S. EPA issued a Final Rule that on October 17, 2006, that exempts the application of a pesticide to or over, including near, waters of the United States if conducted consistent with all relevant requirements under the Federal Insecticide and Fungicide Rodenticide Act (FIFRA), from an NPDES permit under the Clean Water Act in the following two circumstances: (a) The application of pesticides directly to waters of the United States in order to control pests, and (b) The application of pesticides to control pests that are present over waters of the United States, including near such waters, that results in a portion of the pesticides being deposited to waters of the United States (40 CFR 122.3(h)).

24. The California State Assembly passed AB 1721 (Pavley Environmental Education) on September 8, 2005. An act to amend § 60041 of the Education Code, to amend § 71301, § 71302, § 71303, § 71304, and § 71305 of the Public Resources Code, and to add § 13383.6 to the Water Code, relating to environmental education. § 13383.6 is added to the Water Code, to read: § 13383.6. On and after January 1, 2007, if a Regional Water Board or the State Board issues a municipal storm water permit pursuant to § 402(p) of the CWA (33 U.S.C. Sec. 1342(p)) that includes a requirement to provide elementary and secondary public schools with educational materials on storm water pollution, the Permittee may satisfy the requirement, upon approval by the Regional Water Board or State Board, by contributing an equivalent amount of funds to the Environmental Education Account established pursuant to subdivision (a) of § 71305 of the Public Resources Code.

F. Implementation

1. The California Environmental Quality Act (CEQA) (Cal. Pub. Resources Code § 2100 et seq.) requires that public agencies consider the environmental impacts of the projects they approve for development. CEQA applies to projects that are considered discretionary (a governmental agency can use its judgment in deciding whether and how to carry out or approve a project, § 15357) and does not apply to ministerial projects (the law requires a governmental agency to act on a project in a set way without allowing the agency to use its own judgment, § 15369). A ministerial project may be made discretionary by adopting local ordinance provisions or imposing conditions to create decision-making discretion in approving the project. In the alternative, Permittees may establish standards and objective criteria administratively for storm water mitigation for ministerial projects. For water quality purposes regardless of weather a project is discretionary or ministerial, the Regional Water Board considers that all new development and significant redevelopment activity in specified categories, that receive approval or permits from a municipality, are subject to storm water mitigation requirements.

2. The objective of this Order is to protect the beneficial uses of receiving waters in Ventura County. To meet this objective, the Order requires that Best Management Practices (BMPs) will be implemented to reduce the discharge of pollutants in storm water to the maximum extent practicable (MEP), and achieve water quality objectives and standards. The U.S. EPA envisioned that municipal storm water program would be implemented in an iterative manner and improved with each iteration by using information and experience gained during the previous permit term (*Interpretative Policy Memorandum on Reapplication Requirements for MS4 permits* - 61 Fed. Reg. 41697). Municipalities are required to evaluate what is effective and make improvements in order to protect beneficial uses of receiving waters. This Order requires the implementation of an effective combinations of pollution control and pollution prevention measures, education, public outreach, planning, and implementation of source control BMPs and Structural and Treatment Control BMPs. The better–tailored BMPs combined with the performance objectives outlined in this Order have the purpose of attaining water quality objectives and standards (*Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits*- 61 Fed. Reg. 43761). Where WLAs have been adopted for Municipal storm water discharges, this Order requires Permittees to implement controls to achieve the WLAs within the compliance schedule provided in the TMDLs.

   The implementation of the measures set forth in this Order are reasonably expected to reduce the discharge of pollutants conveyed in storm water discharges into receiving waters, and to meet the TMDL WLAs for municipal storm water adopted by the Regional Water Board.

3. The U.S. EPA has recommended that all future TMDLs and TMDL amendments be expressed as daily increments consistent with a federal court ruling (*Friends of the Earth, Inc. v. EPA, et al.* No. 05-5015 (D.C. Cir. 2006)). However, this interpretation does not affect the discretionary authority of the Regional Water Board to express NPDES permit limits and conditions in non daily terms because there is no express or implied statutory limitation (CWA §502(11)) (*Establishing TMDL "Daily Loads" in Light of the Decision by the U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al. (April 2006) and Implications for NPDES Permits*, U.S. EPA Office of Water, memorandum, Nov 15, 2006). This Order translates MS4 TMDL WLAs adopted by the Regional Water Board into forms "consistent with the assumptions and requirements of the TMDL", by use of alternate temporal increments, concentrations, presumptive BMPs, prohibitions, and other express limitations.

4. During the term of the Order, the Permittees shall implement all necessary control measures to reduce pollutant(s) which cause or continue to cause or contribute to water quality impairments, but for which TMDLs have not yet been developed or approved, to eliminate the water quality impairment(s). Successful efforts to reverse the wet weather impairments during the permit term for such pollutants, may avoid the need for a WLA for wet weather or the need to develop a TMDL in the future

5. This Order promotes a land development and redevelopment strategy that considers the water quality and water management benefits associated with smart growth techniques. Such measures include hydromodification mitigation requirements, minimization of impervious surfaces, integrated water resources planning, and low impact development guidelines. (Reference: *Protecting Water Resources with Smart Growth*, EPA 231-R- 04-002, U.S. EPA 2004; *Using Smart Growth Techniques as Storm Water Best Management Practices,* EPA 231-B-05-002, U.S. EPA 2005; *Parking Spaces/Community Places: Finding the Balance through Smart Growth Solutions*, EPA 231-K-06-001, U.S. EPA 2006; *Protecting Water Resources with Higher-Density Development*, EPA 231-R-06-001, U.S. EPA 2006.)

6. The implementation of an effective Public Information and Participation Program is a critical component of a storm water management program. While commercial and industrial facilities are traditionally subject to multiple environmental regulations and receive environmental protection guidance from multiple sources, the general public, in comparison, receives significantly less education in environmental protection. An effective Public Information and Participation Program is required because:

   (a) Activities conducted by the public such as vehicle maintenance, improper household waste materials disposal, improper pet waste disposal and the improper

application of fertilizers and pesticides have the potential to generate a significant amount of pollutants that could be discharged in storm water.

(b) An increase in public knowledge of storm water regulations, proper storage and disposal of household wastes, proper disposal of pet wastes and appropriate home vehicle maintenance practices can lead to a significant reduction of pollutants discharged in storm water.

7. The California Supreme Court ruled in its *City of Burbank* Decision that Water Boards when issuing an NPDES permit may not consider economic factors to justify imposing pollutant restrictions that are less stringent than the applicable federal regulations require (*City of Burbank v. State Water Resources Control Bd.*, 35 Cal.4d, 618 (2005)). However, when the pollutant restrictions in an NPDES are more stringent than that which federal law requires, economic factors must be considered. The requirements in this Order may be explicit or more specific than those enumerated in federal regulations under 40 CFR 122.26 or in U.S. EPA guidance. However, the requirements have been prescribed to be consistent with CWA §402(p)(3)(B)(iii) and are necessary to reduce the discharges of pollutants to the maximum extent practicable and to meet water quality standards. Hence they are no more stringent than that required by federal law.

8. This Order also provides flexibility for Permittees to petition the Regional Water Board Executive Officer to substitute a BMP under this Order with an alternative BMP, if they can provide information and documentation on the effectiveness of the alternative, equal to or greater than the prescribed BMP in meeting the objectives of this Order.

9. This Order contemplates that the Permittees are responsible for considering potential storm water impacts when making planning decisions in order to fulfill the Permittees' CWA requirement to reduce the discharge of pollutants in Municipal Storm Water to the MEP and attain water quality objectives from new development and redevelopment activities. However, the Permittees retain authority to make the final land-use decisions and retain full statutory authority for deciding what land uses are appropriate at specific locations within each Permittee's jurisdiction. This Order and its requirements are not intended to restrict or control local land use decision-making authority.

10. The State Water Board amended the Policy for the Implementation of Toxics Standards in Inland Surface Waters, Enclosed Bays and Estuaries of California (State Implementation Policy – SIP) on February 24, 2005. This Order includes a Monitoring Program that incorporates Minimum Levels (MLs) established under the State Implementation Policy. The MLs represent the lowest quantifiable concentration for priority toxic pollutants that is measurable with the use of proper

method-based analytical procedures and factoring out matrix interference. The SIP's MLs therefore represent the best available science for determining MLs and are appropriate for a storm water monitoring program. The use of MLs allows the detection of toxic priority pollutants at concentrations of concern using recent advances in chemical analytical methods.

11. This Order establishes Municipal Action Levels (MALs) for selected pollutants based on nationwide Phase I MS4 monitoring data for pollutants in storm water. (Reference: http://unix.eng.ua.edu/~rpitt/Research/Research.shtml). The MALs were computed using the statistical based population approach, one of three approaches recommended by the California Water Board's Storm Water Panel in its report, *'The Feasibility of Numerical Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities* (June 2006). The MALs were obtained by multiplying the Median (central tendency measure) with the Coefficient of Variance (estimate of variance measure). MALs are identified in Attachment "C". Permittees shall implement a timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water from the permitted areas to not exceed the MALs. On or after (first October in year 3 after permit adoption), two or more exceedences of a MAL will be construed as a failure to implement adequate control measures and will be considered a violation of the MEP provisions of this Order.

12. This Order is not intended to prohibit the inspection for or abatement of vectors by the State Department of Health Services or local vector agencies in accordance with CA Health and Safety Code, § 116110 et seq. Certain Treatment Control BMPs if not properly designed, operated or maintained may create habitats for vectors (e.g. mosquito and rodents). This Order contemplates that the Permittees will closely cooperate and collaborate with local vector control agencies and the State Department of Health Services for the implementation, operation, and maintenance of Treatment Control BMPs in order to minimize the risk to public health from vector borne diseases.

13. This Order contemplates that Permittees will ensure that implemented Treatment Control BMPs will not pose a safety or health hazard to the public. This Order contemplates that Permittees will ensure that the maintenance of implemented Treatment Control BMPs will comply with all applicable health and safety regulations, such as, but not limited to requirements for worker entry into confined spaces under OSHA Safety and Training education, § 1926.21(b)(6)(i).

14. The CWA prohibits the discharge of pollutants from point sources to waters of the United States unless authorized under an NPDES permit. (33 U.S.C. §§1311, 1342). The State Water Board adopted statewide General Waste Discharge Requirements for

Sanitary Sewer Systems, (WQ Order No. 2006-0003) on May 2, 2006, to provide a consistent, statewide regulatory framework to address Sanitary Sewer Overflows (SSOs). The WDR requires public agencies that own or operate sanitary sewer systems to develop and implement sewer system management plans and report all SSOs to the State Water Board's online SSO database.

The requirements contained in this Order in Part 4.G.1. 'Sewage System Maintenance, Overflow, and Spill Prevention Response Plan' are intended to be consistent with the requirements of the SSO WDR. The Regional Water Board recognizes that there may be some overlap between the MS4 permit provisions and the SSO WDR requirements. The requirements of the SSO WDR are considered the minimum thresholds (see Finding 11 of WQ Order No. 2006-0003). The Regional Water Board will accept the documentation prepared by the Permittees under the SSO WDR for compliance purposes, as satisfying the requirements in Part 4.G.1, provided any more specific or stringent provisions enumerated in this Order, have also been addressed.

15. This Order takes in to consideration the housing needs in the area under the Permittees' jurisdiction by balancing the implementation of Smart Growth and Low Impact Development techniques with the protection of the water resources of the region. Although not required, the Regional Water Board considered the need for housing and the appropriate techniques to allow for reasonable development while protecting the receiving waters from degradation. (Reference: *Considering Housing Needs in Actions Taken by the Regional Water Board: Moving from Costs to Value, 2006).*

16. This Order may have an incremental effect on costs required for compliance with the provisions contained herein. Although not required, Regional Water Board considered costs in preparing this Order. (Reference: *NPDES Stormwater Cost Survey, prepared for California State Water Resources Control Board, CSU, Sacramento 2005).*

G. Public Notification

1. The issuance of waste discharge requirements that serve as an NPDES permit for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 (California Environmental Quality Act) of the Public Resources Code in accordance with California Water Code Section 13389. The California Court of Appeals has affirmed the exemption, and ruled that the Regional Water Board's issuance of an NPDES permit is not subject to review under CEQA (County of Los Angeles et al., v. California Water Boards et al.,) (2006), (Cal.Rptr.3d 619)., Notwithstanding, the Regional Water Board has considered the policies and

requirements set forth in Chapters 1 through 2.6 of CEQA, and further, has considered the final substitute environmental documents for the Ventura County MS4 TMDLs incorporated in this Order.

2. The Regional Water Board has notified the Permittees, and interested agencies and persons of its intent to issue waste discharge requirements for this discharge, and has provided them with an opportunity to make statements and submit their comments.

3. The Regional Water Board has conducted 4 scoping meetings with Permittees and their representatives. On Xxxxx xx, 200x, the Regional Water Board conducted a workshop on reissuance of the NPDES permit and received input from the Permittees and the public regarding proposed changes.

4. This Order shall serve as a NPDES permit, pursuant to CWA § 402, or amendments thereto, and shall take effect 90 days from Order adoption provided the Regional Administrator of the U.S. EPA has no objections.

5. Pursuant to Cal. Water Code § 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board within 30 days of adoption of the Order by the Regional Water Board. A petition must be sent to:

   State Water Resources Control Board
   Office of Chief Counsel
   P.O. Box 100
   Sacramento, CA 95812-0100

6. This Order may be modified or alternatively revoked or reissued prior to its expiration date, in accordance with the procedural requirements of the NPDES program, and the Cal. Water Code for the issuance of waste discharge requirements.

IT IS HEREBY ORDERED that the Permittees, in order to meet the provisions contained in Division 7 of the Cal. Water Code and regulations adopted thereunder, and the provisions of the CWA and regulations adopted thereunder, shall comply with the following:

PART 1 - DISCHARGE PROHIBITIONS

A. Prohibitions - Discharges

1. Discharges into and from the MS4 in a manner causing or contributing to a condition of pollution, contamination or nuisance (as defined In Cal. Water Code § 13050), in waters of the State are prohibited.

2. Discharges from the MS4, which cause or contribute to exceedences of receiving water quality objectives for surface waters are prohibited.

3. Discharges to the MS4 not covered by an NPDES individual or general permit are prohibited.

B. Prohibitions - Non-Storm Water Discharges

The Permittees shall effectively prohibit non-storm discharges into the MS4 and watercourses, except where such discharges:

1. Originate from a State, federal, or other source which they are pre-empted by State or Federal law from regulating.

2. Fall within one of the categories below, are not a source of pollutants, and meet all conditions where specified by the Regional Water Board Executive Officer:
   (1) Stream diversions authorized by the State Water Board.
   (2) Natural springs and rising ground water.
   (3) Uncontaminated ground water infiltration [as defined by 40 CFR 35.2005(20)].[1]
   (4) Flows from riparian habitats or wetlands.
   (5) Flows from emergency fire fighting activity.
   (6) Potable drinking water supply and distribution system releases.[2]
   (7) Drains for foundation, footing and crawl drains.
   (8) Air conditioning condensate.
   (9) Water from crawl space pumps.
   (10) Reclaimed and potable landscape irrigation runoff.
   (11) Dechlorinated/debrominated swimming pool discharges [see definition Part 7].
   (12) Non-commercial car washing by residents or non-profit organizations.
   (13) Sidewalk rinsing
   (14) Pooled storm water from treatment BMPs.[3]

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[1] NPDES permit for ground water dewatering is required within the Los Angeles Region including Ventura County.
[2] Releases may occur only with the implementation of appropriate BMPs and dechlorination prior to discharge [see section G for specific BMPs]. Any agency or municipal (i.e., water dept., fire dept., etc.) that either individually or collectively discharge(s) or reasonably expects to discharge 100,000 gallons or more of potable water per year, shall submit an ROWD to obtain a separate NPDES permit under this Order [see section G.10]. Discharges from utility vaults shall be conducted under coverage of a separate NPDES permit specific to that activity. Discharges from well heads and hydrostatic pipe testing shall be subject to a separate NPDES general permit coverage (CAG674001).
[3] All storm water BMPs shall at a minimum be maintained at a frequency as specified by the manufacturer. All storm water BMPs shall be designed to drain within 72 hours. Storm water treatment BMPs may be drained to the MS4 under this Order if the discharge is not a source of pollutants. The discharge shall cease when the discharge has become a source of a pollutant(s), (bottom sediment included). Sediments shall be disposed of properly, in compliance with all applicable local, state, and federal policies, acts, laws, regulations, ordinances, and statutes.

Type of Discharges:	Conditions under which allowed:	Required BMPs for discharge to occur:
Stream diversions permitted by the State Board;	Shall comply with all conditions in the authorization.	Shall comply with all conditions in the authorization.
Natural springs and rising ground water	1. Ground water dewatering requires a separate NPDES permit. 2. Segregate flow to prevent introduction of pollutants.	Shall comply with all conditions in the authorization.
Uncontaminated ground water infiltration [as defined by 40 CFR 35.2005(20)] (Utility vault dewatering requires a separate NPDES permit.)	NPDES permit for ground water dewatering is required within the Los Angeles Region including Ventura County	Shall comply with all conditions in the authorization.
Flows from riparian habitats or wetlands	Provided that all necessary permits or authorizations are received prior to diverting the stream flow.	Shall comply with all conditions in the authorization.
Flows from emergency fire fighting activity	Pooled water after fire must be discharged or reused in a controlled manner.	
Potable drinking water supply and distribution system releases	Provided planned discharges from water lines and potable water sources shall be dechlorinated, pH adjusted if necessary, reoxygenated, and volumetrically and velocity controlled to prevent resuspension of sediments. Water that has been hyperchlorinated shall not be discharged to municipal separate storm sewers, even after de-chlorination.	To be discharged, this type of water shall be dechlorinated using aeration and/or sodium thiosulfate and/or be allowed to infiltrate to the ground. BMPs such as sand or gravel bags shall be utilized to prevent sediment transport. All sediments shall be collected and disposed of in a legal and appropriate manner.
Drains for foundation, footing and crawl drains	Dewatering requires a separate NPDES permit.	Shall comply with all conditions in the authorization.
Air conditioning	Segregation of flow to prevent	Infiltration whenever

Type of Discharges:	Conditions under which allowed:	Required BMPs for discharge to occur:
condensate	introduction of pollutants	possible
Water from crawl space pumps	Dewatering requires a separate NPDES permit.	NPDES permit for ground water dewatering is required within the Los Angeles Region including Ventura County
Reclaimed and potable landscape irrigation runoff	Segregation of flow to prevent introduction of pollutants.	Implement conservation programs to minimize this type of discharge by using less water.
Dechlorinated / debrominated swimming pool discharges [see definition Part 7]	Provided discharge to a sanitary sewer is not available. Swimming pool discharges shall be dechlorinated, pH adjusted if necessary, reoxygenated, and volumetrically and velocity controlled to prevent resuspension of sediments. Cleaning waste water and filter back wash shall not be discharged to municipal separate storm sewers. Water that has been hyperchlorinated shall not be discharged to municipal separate storm sewers, even after de-chlorination. Chlorine residual in discharge shall not exceed 0.1mg/L.	Pool water may be dechlorinated using time, aeration, and/or sodium thiosulfate.

3. If the Regional Water Board Executive Officer determines that any of the preceding categories of non-storm water discharges are a source of pollutants, the Permittee shall either:

   (a) Prohibit the discharge from entering the MS4; or

(b) Authorize the discharge category and require implementation of appropriate BMPs to ensure that the discharge will not be a source of pollutants; or
(c) Require or obtain coverage under a separate NPDES permit for discharge into the MS4.

4. The Regional Water Board Executive Officer, after providing the opportunity for public comment, may authorize or prohibit the discharge of other categories of non-storm water, after consideration of antidegradation policies and upon presentation of evidence.

PART 2 - RECEIVING WATER LIMITATIONS

1. Discharges from the MS4 that cause or contribute to a violation of water quality standards are prohibited.

2. Discharges from the MS4 of storm water, or non-storm water, for which a Permittee is responsible, shall not cause or contribute to a condition of nuisance.

3. The Permittee shall comply with the Order through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with this Order.[1] This Order shall be implemented to achieve compliance with receiving water limitations. If exceedence(s) of water quality objectives or water quality standards persist, notwithstanding implementation of the Order and its components and other requirements of this Order, the Permittee shall assure compliance with discharge prohibitions and receiving water limitations by complying with the following procedure:

   (a) Upon a determination by either the Permittee(s) or Regional Water Board that discharges are causing or contributing to a violation of applicable water quality standards, the Permittee shall promptly notify and thereafter submit a Receiving Water Limitations (RWL) Compliance Report to the Regional Water Board Executive Officer for approval. The RWL Compliance Report shall be included with the Annual Report, unless the Regional Water Board directs an earlier submittal.

[1] Separately, after permit year 3 (reporting year 15 from issuance of the first permit), two or more exceedences of a Municipal Action Level (MAL) will create a presumption that the implementation of measures to reduce the pollutant(s) in MS4 discharges to the MEP are inadequate. The Permittee is affirmatively required to augment measures to reduce the discharge of the pollutant(s) to not violate the MEP. The 'end-of-pipe' compliance points for MALs are at 36 inches in diameter or greater discharge pipes with outfalls to the receiving waters, with receiving water mass emission measurements as default compliance points.

(b) The RWL Compliance Report shall describe BMPs currently being implemented and the additional BMPs that will be implemented, to prevent or reduce any pollutants that are causing or contributing to the exceedences of water quality standards.

(c) The RWL Compliance Report shall include a BMP implementation schedule.

(d) Within 30 days following approval of the RWL Compliance Report the approved, modified suite of BMPs, implementation schedule, and any additional monitoring required shall be implemented.

(e) Modifications to the RWL Compliance Report, required by the Regional Water Board shall be submitted to the Regional Water Board Executive Officer within 30 days of notification.

(f) Implement the revised monitoring program according to the approved schedule.

4. If a member of the public has documentary evidence of RWL violations, the member of the public may petition the Regional Water Board Executive Officer in writing to review the alleged violation within 60 days to determine if Part 2 of this Order was violated.

5. As long as the Permittee complies with the procedures set forth above to comply with the receiving water limitations, is in compliance with the MALs, and is implementing this Order, the Permittee does not have to repeat the procedure for continuing or recurring exceedences of the same water quality standard(s) unless directed to by the Regional Water Board to develop and implement additional BMPs.

6. Nothing in Part 2 shall prevent the Regional Water Board from enforcing any provision of this Order.

PART 3 - STORM WATER QUALITY MANAGEMENT PROGRAM IMPLEMENTATION

A. General Requirements

1. Each Permittee shall, at a minimum, adopt and implement applicable terms of this Order within its jurisdictional boundaries. The Principal Permittee shall be responsible for program coordination as described in this Order as well as compliance with applicable portions of the permit within its jurisdiction. This Order shall be implemented no later than (60 days from Order adoption), unless a later date has been

specified for a particular provision in this Order and provided the Regional Administrator of the U.S. EPA has no objections.

2. Each Permittee shall, comply with the requirements of 40 CFR 122.26(d)(2) and implement programs and control measures so as to reduce the discharges of pollutants in storm water to the MEP and achieve water quality objectives.

3. Each Permittee shall implement programs and measures to comply with the TMDLs' WLAs for the MS4 as follows:
   (1) Dry Weather Discharges- achieve the concentration or load based numerical limitation for dry weather discharge identified in this Order (Part 6. Total Maximum Daily Load Provisions) through effective prohibition of dry weather discharges.
   (2) Wet Weather Discharges- achieve the concentration or load based numerical limitation or its BMPs expression for wet weather discharge identified in the Order (Part 6. Total Maximum Daily Load Provisions), or implement the BMPs specifically identified in the Order which have a reasonable expectation, when fully implemented, to achieve the WLAs in the Order (Part 6. Total Maximum Daily Load Provisions).

B. Legal Authority

1. Permittees shall possess the necessary legal authority to prohibit, including, but not limited to:

   (a) Illicit connections and illicit discharges, and to remove illicit connections.

   (b) The discharge of non-storm water to the MS4 from:
      (1) Washing or cleaning of gas stations, auto repair garages, or other types of automotive service facilities.
      (2) Mobile auto washing, carpet cleaning, steam cleaning, sandblasting and other such mobile commercial and industrial operations.
      (3) Areas where repair of machinery and equipment which are visibly leaking oil, fluid or antifreeze, is undertaken.
      (4) Storage areas for materials containing grease, oil, or other hazardous substances, and uncovered receptacles containing hazardous materials.
      (5) Swimming pool(s) that have a concentration greater than:
         (A) Chlorine/bromine- 0.1mg/L.
         (B) Chloride- 250mg/L.
         (C) Cyanuric acid of 50ppm;
         (D) E. coli of 235/100 ml (fresh waters).
         (E) Fecal coliforms of 400/100 ml (fresh waters and marine waters).

(F) Enterococcus of 104/100 ml (marine waters).
(G) Total coliforms of 10,000/100 ml, or 1,000/100 ml if the ratio of fecal-to-total coliform exceeds 0.1 (marine waters).

(6) Swimming pool filter backwash.
(7) Decorative fountains and ponds.
(8) Industrial/commercial areas, including restaurant mats.
(9) Concrete truck cement, pumps, tools, and equipment washout.
(10) Spills, dumping, or disposal of materials other, such as:
(A) Litter, landscape and construction debris, garbage, food, animal waste, fuel or chemical wastes, batteries, and any other materials which have the potential to adversely impact water quality; or
(B) Any pesticide, fungicide or herbicide.
(11) Stationary and mobile pet grooming facilities.
(12) Trash container leachate.

2. The Permittees shall possess adequate legal authority to:

(a) Control through interagency agreement, the contribution of pollutants from one portion of the MS4 to another portion of the MS4.

(b) Require persons within their jurisdiction to comply with conditions in the Permittees' ordinances, permits, contracts, model programs, or orders (i.e. hold dischargers to its MS4 accountable for their contributions of pollutants and flows).

(c) Utilize enforcement measures (e.g., stop work orders, notice of violations, fines, referral to City, County, and/or District Attorneys, referral to strikeforces, etc.) by ordinances, permits, contracts, orders, administrative authority, and civil and criminal prosecution.[1]

(d) Control pollutants, including potential contribution[2] in discharges of storm water runoff associated with industrial activities, including construction activities to its MS4, and control the quality of storm water runoff from industrial sites, including construction sites.

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[1] Where the Permittee has no direct authority, the Permittee is required to enter into an agreement with the agency or department that has the enforcement authority. In the case of private responsible parties such as, HOAs, the Permittee must retain enforcement authority.
[2] "Potential contributions" and "potential to discharge," means adequate legal authority to prevent an actual discharge of pollutants to the municipal separate storm sewer system.

(e) Carry out all inspections, surveillance and monitoring procedures necessary to determine compliance and non-compliance with permit conditions including the prohibition on illicit discharges to the MS4.

(f) Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality objectives.

(g) Require that Treatment Control BMPs be properly operated and maintained.

3. Each Permittee has adopted a Storm Water Quality Ordinance based upon a countywide model. Each Permittee will update its Storm Water Quality Ordinance to be able to enforce all requirements of this Order, no later than (6 months from adoption date).

4. Each Permittee shall submit no later than (180 days after adoption date), a statement by its legal counsel that the Permittee has obtained and possesses all necessary legal authority to comply with this Order through adoption of ordinances and/or municipal code modifications.

C. Fiscal Resources

1. The Permittees shall allocate all necessary funds to implement the activities required to comply with the provisions of this Order.[1] Each Permittee shall:

(a) Submit an Annual Budget Summary that shall include:
(1) The storm water budget for the prior report year, using actual expenditures with written explanation where necessary for the implementation of the storm water program.

(2) The storm water budget for the upcoming report year, using estimated expenditures with written explanation where necessary for the implementation of the storm water program.

(3) The summary report shall identify for both the prior report year (actual expenditure) and the upcoming report year (estimated expenditure) the following specific categories:
(A) Program Management Activities.
(i) Overall Administrative costs

[1] The sources of funding may be the general funds, and/or Benefit Assessment, plan review fees, permit fees, industrial/commercial user fee, revenue bonds, grants or other similar funding mechanism.

(B) Program Required Activities Implementation (storm water related activities only). Provide figures breakdown of expenditures for the categories below:
- (i) Illicit connection/illicit discharge.
- (ii) Development planning.
- (iii) Development construction.
- (iv) Construction inspection activities.
- (v) Industrial/Commercial inspection activities.
- (vi) Public Agency Activities.
  - (I) Maintenance of Structural BMPs and Treatment Control BMPs.
  - (II) Inspection of Structural BMPs and Treatment Control BMPs;
  - (III) Municipal Street Sweeping for Commercial/Industrial land use only.
  - (IV) Catch basin clean-outs (include dumping fees separately).
  - (V) Storm drain clean-outs (include dumping fees separately).
  - (VI) Other costs (describe).
- (vii) Public Information and Participation.
- (viii) Monitoring Program.
- (ix) Miscellaneous Expenditures (describe).

D. Modifications/ Revisions

1. No later than (90 days after Regional Water Board adoption of this Order) each Permittee shall modify storm water management programs, protocols, practices, and municipal codes to make them consistent with the requirements herein.

E. Designation and Responsibilities of the Principal Permittee

1. The Ventura County Watershed Protection District is hereby designated as the Principal Permittee. As such, the Principal Permittee shall:

   (a) Participate in the County Environmental Crimes Task Force.
   (b) Coordinate and facilitate activities necessary to comply with the requirements of this Order, but is not responsible for ensuring compliance of any individual Permittee.
   (c) Coordinate permit activities among Permittees and act as liaison between Permittees and the Regional Water Board on permitting issues.
   (d) Provide technical and administrative support for committees that will be organized to implement this Order and its requirements.

(e) Evaluate, assess, and synthesize the results of the monitoring program and the effectiveness of the implementation of BMPs.
(f) Convene the Management Committees (MCs) and subcommittees constituted pursuant to Part F, below, upon designation of representatives.
(g) Implement the Countywide Monitoring Program required under the Order and evaluate, assess and synthesize the results of the monitoring program.
(h) Provide personnel and fiscal resources for the collection, processing and submittal to the Regional Water Board of monitoring and annual reports, and summaries of other reports required under this Order.
(i) Comply with the "Responsibilities of the Permittees" in Part 3.F., below.

F. Responsibilities of the Permittees

1. Each Permittee is required to comply with the requirements of this Order applicable to discharges within its boundaries (see Findings- Permit Coverage D.1 and D.2) and not for the implementation of the provisions applicable to the Principal Permittee or other Permittees. Each Permittees shall:

(a) Comply with the requirements of this Order and any modifications thereto.
(b) Coordinate among its internal departments and agencies, as necessary, to facilitate the implementation of the requirements of this Order applicable to such Permittees in an efficient and cost-effective manner.
(c) Participate in intra-agency coordination (e.g., Planning Department, Fire Department, Building and Safety, Code Enforcement, Public Health, Parks and Recreation, and others) necessary to successfully implement the provisions of this Order.
(d) Report, in addition to the Budget Summary, any supplemental dedicated budgets for the same categories.
(e) Be represented at all Management Committee Meetings, which will meet at least once a month.
(f) Be represented at all subcommittee meetings. Currently there are 5 subcommittees which were functional during the second permit term:
  (1) Residential/Public Outreach.
  (2) Business & Illicit Discharge.
  (3) Planning and Land Development.
  (4) Construction.
  (5) Public Infrastructure.

PART 4 - SPECIAL PROVISIONS

A. General Requirements

1. This Order and the provisions herein, are intended to develop, achieve, and implement a timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water to the MEP and achieve water quality objectives for the permitted areas in the County of Ventura.

2. Best Management Practice Substitution

   The Regional Water Board Executive Officer may approve any site-specific BMP substitution upon petition by a Permittee(s) and after public notice, if the Permittee can document that:

   (a) The proposed alternative BMP or program will meet or exceed the objective of the original BMP or program in the reduction of storm water pollutants.
   (b) The fiscal burden of the original BMP or program is substantially greater than the proposed alternative and does not achieve a substantially greater improvement in storm water quality.
   (c) The proposed alternative BMP or program will be implemented within a similar period of time.

B. Watershed Initiative Participation

1. The Principal Permittee consents to participate in appropriate water quality meetings for watershed management planning, including but not limited to the following:

   (a) Southern California Stormwater Monitoring Coalition (SMC).
   (b) SMC Regional Monitoring Programs.
   (c) Southern California Regional Bioassessment Program.
   (d) Calleguas Creek Watershed Management Plan.
   (e) Santa Clara River Enhancement and Management Plan.
   (f) Steelhead Restoration and Recovery Plan.
   (g) Wetlands Recovery Project.
   (h) Ventura County Task Force of the Wetlands Recovery Project.
   (i) Southern California Bight Project.
   (j) Other appropriate watershed planning groups.

C. Public Information and Participation Program (PIPP)

The Principal Permittee shall implement a Public Information and Participation Program (PIPP) that includes, but is not limited to, the requirements listed in this section. The Principal Permittee shall be responsible for developing and implementing the PIPP, and shall coordinate with Permittees to implement specific requirements. The objectives of the PIPP are as follows:

- To measurably increase the knowledge of the target audience about the MS4, the adverse impacts of storm water pollution on receiving waters and potential solutions to mitigate the impacts.
- To measurably change the waste disposal and storm water pollution generation behavior of target audiences by encouraging implementation of appropriate solutions.
- To involve and engage communities in Ventura County to participate in mitigating the impacts of storm water pollution.

1. Residential Program

(a) "No Dumping" Message
Each Permittee shall label all storm drain inlets that they own with a legible "no dumping" message. In addition, signs with prohibitive language discouraging illegal dumping shall be posted at designated public access points to creeks, other relevant water bodies, and channels. Signage and storm drain messages shall be legible and maintained.

(b) Public Reporting
Each Permittee will identify staff who will serve as the contact(s) person for reporting clogged catch basin inlets and illicit discharges/dumping, faded or missing catch basin labels, and general storm water management information. Permittees shall include this information, updated by July 1 of each year, in public information media such as the government pages of the telephone book, and internet web sites. The Principal Permittee shall compile a list of the general public reporting contacts submitted by all Permittees and make this information available on the web site (http://www.vcstormwater.org/contact.htm) and upon request. Each Permittee is responsible for providing current, updated information to the Principal Permittee.

(c) Outreach and Education
(1) The Principal Permittee shall implement the following activities:
(A) Conduct a Storm Water pollution prevention advertising campaign.
(B) Conduct Storm Water pollution prevention public service announcements.
(C) Distribute storm water pollution prevention public education materials to:
(i) Automotive parts stores.
(ii) Home improvement centers/lumber yards/hardware stores.
(iii) Pet shops/feed stores.
(D) Public education materials shall include, but are not limited to information on the proper disposal, storage, and use of:

(i) Vehicle waste fluids.
(ii) Household waste materials.
(iii) Construction waste materials.
(iv) Pesticides, herbicides, and fertilizers (including integrated pest management practices-IPM).
(v) Green waste (including lawn clippings and leaves).
(vi) Animal wastes.

(E) Organize watershed Citizen Advisory Groups/Committees to develop effective methods to educate the public about storm water pollution no later than (365 days after the adoption of this Order).
(F) Organize events targeted to residents and population subgroups; and
(G) Maintain the Countywide storm water website (www.vcstormwater.org), which shall include educational material listed in the preceding section C.1(c)(1)(C).

(2) The Principal Permittee shall develop a strategy to educate ethnic communities through culturally effective methods. Details of this strategy should be incorporated into the PIPP, and implemented, no later than (180 days after the adoption of this Order).
(3) Each Permittee shall continue the existing outreach program to residents on the proper disposal of litter, green waste, pet waste, proper vehicle maintenance, lawn care and water conservation practices.
(4) Each Permittee shall conduct educational activities within its jurisdiction and participate in countywide events.
(5) The Permittees shall make a minimum of 10 million impressions per year to the general public related to storm water quality, with a minimum of 5 million impression via newspaper, local TV access, local radio and/or internet access.
(6) The Principal Permittee, in cooperation with the Permittees, shall provide schools within each School District in the County with materials, including, but not limited to, videos, live presentations, and other information necessary to educate a minimum of 50 percent of all school children (K-12) every 2 years on storm water pollution.
Pursuant to AB 1721 (2005), beginning January 1, 2007, the Permittees, in lieu of providing educational materials/funding to School Districts in the County, may opt to provide an equivalent amount of funds or fraction thereof to the Environmental Education Account established within the State Treasury.[1] This option requires the written approval of the Regional Water Board Executive Officer.

[1] Matching funds shall be equivalent to $10 per targeted student per year. Dollar value is to be indexed to the 2006/2007 fiscal year.

(7) Each Permittee shall provide the contact information for their appropriate staff responsible for storm water public education activities to the Principal Permittee and contact information changes no later than 30 days after a change occurs.

(8) The Permittees shall develop and implement a strategy to measure the effectiveness of in-school educational programs. The protocol shall include assessment of students' knowledge of the adverse impacts of storm water pollution and solutions before and after educational programs are conducted. The strategy shall be implemented no later than (180 days after the adoption of this Order).

(9) The Permittees shall develop and implement a behavioral change assessment strategy no later than (180 days after the adoption of this Permit), in order to ensure that the PIPP is demonstrably effective in changing the behavior of the public. The strategy shall be developed based on current sociological data and studies.

(d) Pollutant-Specific Outreach

The Principal Permittee, in cooperation with Permittees, shall coordinate to develop outreach programs that focus on the watershed-specific pollutants identified in Attachment "B" (Pollutants of Concern) no later than (180 days after the adoption of this Order). Metals may be appropriately addressed through the Industrial/Commercial Facilities Program (e.g. the distribution of educational materials on appropriate BMPs for metal fabrication and recycling facilities that have been identified as a potential source). Region-wide pollutants may be included in the Principal Permittee's mass media outreach program.

2. Businesses Program

(a) Corporate Outreach

(1) The Permittees shall develop and implement a Corporate Outreach program to educate and inform corporate managers about storm water regulations and BMPs. The program shall target a minimum of four RGO franchisers and cover a minimum of 80% of RGO franchisees in the county, four retail automotive parts franchisers, two home improvement center franchisers and six restaurant franchisers. Corporate Outreach for all target facilities shall be conducted not less than twice during the term of this Order, with the first outreach contact to begin no later than (2 years after the adoption of this Order). At a minimum, this program shall include:

(A) Conferring with corporate management to explain storm water regulations.

(B) Distribution and discussion of educational material regarding storm water pollution and BMPs, and provide managers with recommendations to facilitate employee and facility compliance with storm water regulations.

(2) Corporate Outreach for all RGOs, automotive parts stores, home improvement centers and restaurant chains corporations shall be conducted not less than twice during the term of this Order, with the first outreach contact to begin no later than (2 years after the adoption of this Order).

(b) Business Assistance Program

The Permittees shall implement a Business Assistance Program to provide technical resource assistance to small businesses to advise them on BMPs implementation to reduce the discharge of pollutants in storm water. The Program shall include:

(1) On-site technical assistance or consultation via telephone or e-mail to identify and implement storm water pollution prevention methods and best management practices.

(2) Distribution of storm water pollution prevention education materials to operators of auto repair shops, car wash facilities (including mobile car detailing), mobile carpet cleaning services, commercial pesticide applicator services and restaurants.

D. Industrial/Commercial Facilities Program

Each Permittee shall require implementation of pollutant reduction and control measures at industrial and commercial facilities, with the objective of reducing pollutants in storm water. Except where specified otherwise in this Order, pollutant reduction and control measures may be used alone or in combination, and may include Structural Treatment Control, Source Control BMPs, and operation and maintenance procedures, which may be applied before, during, and/or after pollution generating activities. At a minimum, the Industrial/Commercial Facilities Control Program shall include requirements to: (1) track, (2) inspect, and (3) ensure compliance with municipal ordinances at industrial and commercial facilities that are critical sources of pollutants in storm water.

1. Inventory of Critical Sources

(a) Each Permittee shall maintain a watershed-based inventory or database of all facilities within its jurisdiction that are critical sources of storm water pollution. Critical Sources to be tracked are summarized below, and specified in Attachment "D":

(1) Commercial Facilities

(A) Restaurants.

(B) Automotive service facilities.
(C) RGOs and automotive dealerships.
(D) Nurseries and nursery centers.

(2) U.S. EPA Phase I, II Facilities

(3) Other Federally-mandated Facilities [as specified in 40 CFR 122.26(d)(2)(iv)(C)]
(A) Municipal landfills.
(B) Hazardous waste treatment, disposal, and recovery facilities.
(C) Facilities subject to SARA Title III (also known as the Emergency Planning and Community Right-to-Know Act (EPCRA)).

(b) Each Permittee shall include the following minimum fields of information for each critical sources industrial and commercial facility:
(A) Name of facility and name of owner/operator.
(B) Address of facility.
(C) Coverage under the IASGP or other individual or general NPDES permits or any applicable waiver issued by the Regional or State Board pertaining to runoff discharges.
(D) A narrative description including Standard Industrial Classification (SIC) System/North American Industry Classification System (NAICS) Codes that best describe the industrial activities performed and principal products used at each facility and status of exposure to storm water.

(c) The Regional Water Board recommends that Permittees include additional fields of information, such as material usage and/or industrial output, and discrepancies between SIC System/NAICS Code designations (as reported by facility operators) and identify the actual type of industrial activity that has the potential to pollute storm water. In addition, the Regional Water Board recommends the use of an automated database system, such as a Geographical Information System (GIS) or Internet-based system.

(d) Each Permittee shall update its inventory of critical sources at least annually. The update may be accomplished through collection of new information obtained through field activities or through other readily available inter and intra-agency informational databases (e.g. business licenses, pretreatment permits, sanitary sewer hook-up permits, and similar information).

2. Inspect Critical Sources

(a) Commercial Facilities

Each Permittee shall inspect all facilities identified in Part 4 D.2. twice during the 5-year term of the Order, provided that the first inspection occurs no later than (2 years from the adoption of this Order). A minimum interval of six months between the first and the second mandatory compliance inspection is required. In addition, each Permittee shall implement the activities outlined in the following subsections. At each facility, inspectors shall verify that the operator is implementing the mandatory source control BMPs. The Permittees shall require implementation of additional treatment control BMPs where storm water flows from the MS4 discharge to an ESA or a CWA § 303(d) listed waterbody (see section 3(b) below). Likewise, for those BMPs that are not adequate to achieve MALs and/or water quality objectives, Permittees may require additional site-specific controls, such as treatment control BMPs.

(1) Restaurants-

Level of inspections: Each Permittee, in cooperation with its appropriate department (such as health or public works), shall inspect all restaurants within its jurisdiction to confirm that storm water BMPs are being effectively implemented in compliance with State law, County and municipal ordinances. BMPs in the following Table 1 shall be implemented, unless the pollutant generating activity does not occur.

Table 1

Pollutant-Generating Activity	BMP Narrative Description	2003 California Stormwater BMP Handbook Industrial and Commercial BMP Identification #
Waste/Hazardous Materials Storage, Handling and Disposal	Distribution of educational materials on storm water pollution prevention practices to the public.	By Municipality
Unauthorized Non-Storm Water Discharges	Effective elimination of non-storm water discharges.	SC-10
Accidental Spills/Leaks	Implementation of effective spills/leaks prevention and response procedures.	SC-11
Outdoor Storage of Raw Materials	Implementation of effective source control practices and structural devices.	SC-33
Storage and Handling of Solid Waste	Implementation of effective solid waste storage/handling practices and appropriate control measures	SC-34
Parking/Storage Area Maintenance	Implementation of effective parking/storage area designs and housekeeping/maintenance practices	SC-43
Storm Water Conveyance System Maintenance	Implementation of proper conveyance system operation and maintenance protocols.	SC-44

(2) Automotive Service Facilities-

Level of Inspection: Each Permittee shall confirm that BMPs are being effectively implemented at each facility within its jurisdiction, in compliance with County and municipal ordinances. The inspections shall verify that BMPs in the following Table 2 are being implemented, unless the pollutant generating activity does not occur.

Table 2

Pollutant-Generating Activity	BMP Narrative Description	2003 California Stormwater BMP Handbook Industrial and Commercial BMP Identification #
Unauthorized Non-Storm Water Discharges	Effective elimination of non-storm water discharges.	SC-10
Accidental Spills/Leaks	Implementation of effective spills/leaks prevention and response procedures.	SC-11
Vehicle/Equipment Fueling.	Implementation of effective fueling source control devices and practices.	SC-20
Vehicle/Equipment Cleaning.	Implementation of effective equipment/vehicle cleaning practices and appropriate wash water management practices	SC-21
Vehicle/Equipment Repair	Implementation of effective vehicle/equipment repair practices and source control devices.	SC-22
Outdoor Liquid Storage	Implementation of effective outdoor liquid storage source controls and practices.	SC-31
Outdoor Storage of Raw Materials	Implementation of effective source control practices and structural devices.	SC-33
Storage and Handling of Solid Waste	Implementation of effective solid waste storage/handling practices and appropriate control measures	SC-34
Parking/Storage Area Maintenance	Implementation of effective parking/storage area designs and housekeeping/maintenance practices	SC-43
Storm Water Conveyance System Maintenance Practices	Implementation of proper conveyance system operation and maintenance protocols.	SC-44

(3) Retail Gasoline Outlets and Automotive Dealerships-

Level of Inspections: Each Permittee shall confirm that BMPs are being effectively implemented at each facility within its jurisdiction, in compliance with County and municipal ordinances. The inspections shall verify that BMPs in the following Table 3 are being implemented, unless the pollutant generating activity does not occur.

Table 3

Pollutant-Generating Activity	BMP Narrative Description	2003 California Stormwater BMP Handbook Industrial and Commercial BMP Identification #
Unauthorized Non-Storm Water Discharges	Effective elimination of non-storm water discharges.	SC-10
Accidental Spills/Leaks	Implementation of effective spills/leaks prevention and response procedures.	SC-11
Vehicle/Equipment Fueling	Implementation of effective fueling source control devices and practices.	SC-20
Vehicle/Equipment Cleaning	Implementation of effective wash water control devices.	SC-21
Outdoor Storage of Raw Materials	Implementation of effective source control practices and structural devices.	SC-33
Storage and Handling of Solid Waste	Implementation of effective solid waste storage/handling practices and appropriate control measures	SC-34
Building and Grounds Maintenance	Implementation of effective facility maintenance practices.	SC-41
Parking/Storage Area Maintenance	Implementation of effective parking/storage area designs and housekeeping/maintenance practices	SC-43

(4) Commercial Nurseries and Nursery Centers (Merchant Wholesalers, Nondurable Goods, and Retail Trade)-

Level of Inspection: Each Permittee shall confirm that BMPs are being effectively implemented at each facility within its jurisdiction, in compliance with County and municipal ordinances. The inspections shall verify that BMPs in the following Table 4 are being implemented, unless the pollutant generating activity does not occur.

Table 4

Pollutant-Generating Activity	BMP Narrative Description	2003 California Stormwater BMP Handbook Industrial and Commercial BMP Identification #
Unauthorized Non-Storm Water Discharges	Effective elimination of non-storm water discharges.	SC-10
Outdoor Loading/Unloading	Implementation of effective outdoor loading/unloading practices.	SC-30
Outdoor Liquid Storage	Implementation of effective outdoor liquid storage source controls and practices.	SC-31
Outdoor Equipment Operations	Implementation of effective outdoor equipment source control devices and practices.	SC-32
Outdoor Storage of Raw Materials	Implementation of effective source control practices and structural devices.	SC-33
Building and Grounds Maintenance	Implementation of effective facility maintenance practices.	SC-41

(A) For nursery operations (Agricultural Facilities) in the NAICS Code 11142x - Nursery and Floriculture Production, which are subject to the Conditional Waiver, each Permittee shall:

(i) Verify enrollment under the Conditional Waiver by recording a valid identification number.

(ii) Notify all nonfilers of their lawful obligation to apply for coverage under the Regional Water Board's Conditional Waiver.

(B) Permittees shall submit a list of facility names in the NAICS Code 11142x that have been notified to apply for the Conditional Waiver (nonfilers). The list of nonfilers shall be electronically sent to the Regional Water Board's Regional Programs at the following e-mail address: sunger@waterboards.ca.gov.

(b) Industrial Facilities

Each Permittee shall conduct compliance inspections at Phase I, II facilities as specified below.

(1) **Frequency of Inspection**

(A) Each Permittee shall perform an initial inspection at all industrial facilities identified by the U.S. EPA in 40 CFR 122.26(c) no later than (2 years after the adoption of the Order). After the initial inspection, all facilities determined as having exposure of industrial activities to storm water are subject to a second mandatory compliance inspection. A minimum interval of 6 months between the first and the second compliance inspection is required.

(B) Following the first mandatory compliance inspection, a Permittee shall perform a second mandatory compliance inspection yearly at a minimum of 20% of the facilities determined not to have exposure of industrial activities to storm water. The purpose of this inspection is to verify the continuity of the no exposure status. Facilities determined as having exposure will be notified that they must obtain coverage under the IASGP. A facility need not be inspected more than twice during the term of the Order unless subject to an enforcement action. A minimum interval of 6 months in between the first and the second compliance inspection is required.

(C) Applicable to all facilities: A Permittee need not inspect facilities that have been inspected by the Regional Water Board within the previous 24 month interval. However, if the Regional Water Board performed only one inspection, the Permittee shall conduct the second required mandatory compliance inspection.

(2) **Level of Inspection:** Each Permittee shall confirm that each operator:

(A) Has a current Waste Discharge Identification (WDID) number for facilities discharging storm water associated with industrial activity, and that a Storm Water Pollution Prevention Plan (SWPPP) is available on-site; and,

(B) Is effectively implementing BMPs in compliance with County and municipal ordinances. Facilities must implement the source control BMPs identified in Part 4. D. 3. and Appendix D, *California Stormwater Industrial and Commercial BMP Handbook (2003)*. The Permittees shall require implementation of additional treatment control BMPs where the storm water from the MS4 discharges to a CWA § 303(d) listed waterbody; or.

(C) Has applied and has a current No Exposure Certification (and WDID number) for facilities subject to this requirement.

3. Ensure Compliance of Critical Sources

(a) **BMP Implementation:** In the event that a Permittee determines that a BMP is infeasible at any site, including those specified in the California Stormwater Industrial and Commercial BMP Handbook (2003), the Permittee shall require implementation of similar BMPs that will achieve the equivalent reduction of pollutants in the storm water discharges. Likewise, for those BMPs that are not adequate to achieve MALs and/or water quality objectives, Permittees may require additional site-specific controls, such as treatment control BMPs.

(b) **ESAs and Impaired Waters:** For critical sources that discharge to ESAs or that are tributary to CWA § 303(d) listed impaired waterbodies, the Permittees shall require operators to implement additional controls to reduce pollutants in storm water runoff that are causing or contributing to exceedences of MALs and/or water quality objectives.

(c) **Progressive Enforcement:** Each Permittee shall implement a progressive enforcement policy to ensure that facilities are brought into compliance with all storm water requirements within a reasonable time period as specified below.

(1) In the event that a Permittee determines, based on an inspection conducted, that an operator has failed to adequately implement all necessary BMPs, that Permittee shall take progressive enforcement actions which, at a minimum, shall include a follow-up inspection within 4 weeks from the date of the initial inspection.

(2) In the event that a Permittee determines that an operator has failed to adequately implement BMPs after a follow-up inspection, that Permittee shall take further enforcement action as established through authority in its municipal code and ordinances or through the judicial system.

(3) Each Permittee shall maintain records and make them available on request to the Regional Water Board, including inspection reports, warning letters, notices of violations, and other enforcement records, demonstrating a good faith effort to bring facilities into compliance.

(d) Interagency Coordination

(1) **Referral of Violations of the Municipal Storm Water Ordinances and California Water Code § 13260:** A Permittee may refer a violation(s) to the Regional Water Board provided that that Permittee has made a good faith effort of progressive enforcement. At a minimum, a Permittee's good faith effort must be documented with:

(A) Two follow-up inspections, and
(B) Two warning letters or notices of violation.

(2) **Referral of Violations of the Industrial Activities Storm Water General Permit (IASGP), including Requirements to File a Notice of Intent or No Exposure Certification:** For those facilities in violation of the IASGP, Permittees may escalate referral of such violations to the Regional Water Board (electronically on a quarterly basis to the Regional Water Board's Storm Water Site at MS4stormwaterrb4@waterboards.ca.gov) after one inspection and one written notice (copied to the Regional Water Board) to the operator regarding the violation. In making such referrals, Permittees shall include, at a minimum, the following documentation:

(A) Name of the facility.
(B) Operator of the facility.
(C) Owner of the facility.
(D) Industrial activity being conducted at the facility that is subject to the IASGP.
(E) Records of communication with the facility operator regarding the violation, which shall include at least an inspection report.
(F) The written notice of the violation copied to the Regional Water Board.

(3) **Investigation of Complaints Regarding Facilities – Transmitted by the Regional Water Board Staff:** Each Permittee shall initiate, within one business day,[1] investigation of complaints (other than non-storm water discharges) regarding facilities within its jurisdiction. The initial investigation shall include, at a minimum, a limited inspection of the facility to confirm the complaint to determine if the facility is effectively complying with the municipal storm water urban runoff ordinances, and to oversee corrective action.

(4) **Support of Regional Water Board Enforcement Actions:** As directed by the Regional Water Board Executive Officer, Permittees shall support Regional Water Board enforcement actions by: assisting in identification of current owners, operators, and lessees of facilities; providing staff, when available, for joint inspections with Regional Water Board inspectors; appearing as witnesses in Regional Water Board enforcement hearings; and providing copies of inspection reports and other progressive enforcement documentation.

(5) **Participation in a Task Force:** The Permittees consent to participate with the Regional Water Board, and other public agencies on an enforcement task

[1] Permittees may comply with the Permit by taking initial steps (such as logging, prioritizing, and tasking) to "initiate" the investigation within that one business day. However, the Regional Water Board would expect that the initial investigation, including a site visit, to occur within four business days.

force such as the Storm Water Task Force, to communicate concerns regarding special cases of storm water violations by industrial and commercial facilities and to develop a coordinated approach to enforcement action.

E. Planning and Land Development Program

1. The Permittees shall implement a development-planning program that, no later than ninety (90) days after the date the Permit becomes effective, requires all New Development and Redevelopment projects to:

   (a) Minimize impacts from storm water runoff on the biological integrity of Natural Drainage Systems and water bodies in accordance with requirements under CEQA (Cal. Pub. Resources Code § 21100), CAL. WATER CODE §13369, CWA § 319, CWA § 402(p), CWA § 404, CZARA § 6217(g), ESA § 7, and local government ordinances.
   (b) Minimize pollutants emanating from impervious surfaces by reducing the percentage of Effective Impervious Area[1] to less than 5 percent of total project area.
   (c) Minimize the percentage of impervious surfaces on development lands to support the percolation and infiltration of storm water into the ground.
   (d) Minimize pollution emanating from impervious surfaces on developed land such as roof-tops, parking lots, and roadways through the use of appropriate Source Controls (good housekeeping practices), Low Impact Development Strategies, and Treatment Control BMPs.
   (e) Properly design and maintain Treatment Control BMPs (in order to avoid the breeding of vectors).[2]
   (f) Select an integrated approach to mitigate storm water pollution by utilizing a suite of controls in the following order of preference to remove storm water pollutants, reduce storm water runoff volume, and beneficially reuse storm water:
      (1) Low Impact Development Strategies.
      (2) Integrated Water Resources Management Strategies.

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[1] Effective Impervious Area means that portion of the impervious area that is hydrologically connected via sheet flow or a discrete hardened conveyance to a drainage system or a receiving water body. Impervious surfaces may be rendered "ineffective" if the storm water runoff is:

- drained into a vegetated cell, over a vegetated surface, or through vegetated swale having soil characteristics, either as native material or amended using approved soil engineering techniques;
- collected and stored for beneficial use such as irrigation, supply for a gray water system, or other purpose; or
- discharged into an infiltration trench,

capable of preventing surface discharge of the runoff quantity that must be mitigated according to Part 4.E.1(III)(2).

[2] Treatment BMPs when designed to drain within 72 hours of the end of rainfall minimize the potential for the breeding of vectors.

(3) Multi-benefit Natural Feature BMPs.
(4) Prefabricated/Proprietary Treatment Control BMPs.

I. Low Impact Development

1. All new development and redevelopment projects shall integrate Low Impact Development (LID) principles into project design. LID is a storm water management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect predevelopment hydrologic functions. LID is primarily a source control strategy, and minimizes the need for large sub-regional and regional treatment control BMPs.

2. The Permittees shall develop a LID Technical Guidance Document no later than (3 months from the Order's adoption date) for use by Land Planners and Developers. The LID Technical Guidance Document shall assure compliance with all requirements of Section E. of this Order and shall also include objectives and specifications for LID in the areas of:
   (a) Site Assessment.
   (b) Site Planning and Layout.
   (c) Vegetative Protection, Revegetation and Maintenance.
   (d) Techniques to Minimize Land Disturbance.
   (e) Integrated Management Practices.
   (f) LID Design and Flow Modeling Guidance.
   (g) Hydrologic Analysis.
   (h) LID Translators.

   These objectives shall not be any less stringent than any applicable requirement of Section E. of this Order.

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3. The Permittees will facilitate implementation of LID by providing key industry, regulatory, and stakeholders with LID objectives and specifications developed in the LID Technical Guidance Document through a training program. The LID training program will include the following:
   (a) LID targeted sessions and materials for builders, design professionals, regulators, resource agencies, and stakeholders.
   (b) A combination of awareness on national efforts and local experience gained through LID pilot projects and demonstration projects.
   (c) Materials and data from LID pilot projects and demonstration projects including case studies.

(d) Guidance on how to integrate LID requirements into the local regulatory program(s) and requirements.
(e) Availability of the LID Technical Guidance Document.

II. Numeric Hydromodification Mitigation Criteria

1. Hydrologic (Flow/Volume/Duration) Control

(a) Each Permittees shall require all new development and redevelopment projects to implement hydrologic control measures, to prevent accelerated downstream erosion and to protect stream habitat in natural drainage systems. The purpose of the hydrologic controls is to minimize changes in post-development hydrologic storm water runoff discharge rates, velocities, and duration. This shall be achieved by maintaining the project's pre-development storm water runoff flow rates and durations.

(b) Natural drainage systems, including tributaries, are located in the following watersheds:
(1) Ventura River.
(2) Santa Clara River.
(3) Calleguas Creek.
(4) Miscellaneous Ventura Coastal.

(c) Hydrologic Control in natural drainage systems shall be achieved by maintaining the Erosion Potential (E_p) in streams at a value of 1, unless an alternative value can be shown to be protective of the natural drainage systems from erosion, incision, and sedimentation that can occur as a result of flow increases from impervious surfaces and damage stream habitat.[1]

(d) The Southern California Storm Water Monitoring Coalition (SMC) is expected to initiate a study to develop a regional methodology to eliminate or mitigate the adverse impacts of hydromodification as a result of urbanization, including hydromodification assessment and management

[1] See Attachment "E" - Determination of Erosion Potential.

tools.[1] The SMC has identified the following objectives for the second Phase of the Hydromodification Control Study (HCS):

(1) Establishment of a stream classification for Southern California streams.

(2) Development of a deterministic or predictive relationship between changes in watershed impervious cover and stream-bed/stream bank enlargement.

(3) Development of a numeric model to predict stream-bed/stream bank enlargement and evaluate the effectiveness of mitigation strategies.

(e) Until the completion of the SMC's HCS, Permittees shall continue to implement the following Interim Hydromodification Criteria to control the adverse impacts of changes in hydrology that result from new development and redevelopment projects. The Interim Hydromodification Impact Criteria are:

(1) **Projects disturbing land area of less than fifty acres**
Hydrologic control for projects in this size category shall involve matching the Hydrograph for the 2-year post development peak flow, volume, and duration to the pre-development peak flow, volume, and duration for the 2-year 24 hour storm event (not exceeding the pre-development flows).

(2) **Projects disturbing land areas of fifty acres or greater** [2]
Hydrologic control for projects in this size category shall involve the completion of a Hydromodification Analysis Study (HAS) by the project proponent to demonstrate that post development conditions are not expected to alter the duration of sediment transporting flows in receiving streams and tributaries. The HAS must demonstrate that the selected hydrologic controls will maintain an Erosion Potential value of 1 unless an alternative value can be shown to be protective of the natural drainage systems from erosion, incision, and sedimentation that can occur as a result of flow increases from impervious surfaces and damage stream habitat in natural drainage system tributaries.

(f) The Permittees shall participate in the second phase of the SMC's HCS to develop a regional stream classification system, a numerical model to predict the hydrological changes resulting from new development and to

[1] Coleman, D., C. MacRae, and E. Stein. 2005. Effect of Increases in Peak Flows and Imperviousness on the Morphology of Southern California Streams. Technical Report 450. Southern California Coastal Water Research Project. 70 pp.
[2] 91st percentile of all construction projects covered under the general construction permit (CASGP) in Southern California.

identify effective mitigation strategies. Should the SMC not proceed with the HCS, Permittees shall complete a similar study limited to the area of Ventura County no later than (18 months from the Order's adoption).

(g) Hydromodification Control Plan
  (1) On completion of the HCS (SMC HCS or Permittee HCS), the Permittees shall develop and implement Watershed Hydromodification Control Plans (HCPs), no later than 6 months after the completion of the HCS. The HCP shall identify tributary classifications, flow rate and duration control methods, sub-watershed mitigation strategies, and any in-stream controls, which will maintain the stream and tributary Erosion Potential at 1 unless an alternative value can be shown to be protective of the natural drainage systems from erosion, incision, and sedimentation that can occur as a result of flow increases from impervious surfaces and damage stream habitat in natural drainage system tributaries.
  (2) The HCS shall contain the following elements:
    (A) Hydromodification Management Standard: Storm water discharges from applicable new development and redevelopment projects shall not cause an increase in the erosion potential of the receiving creek over the pre-project (existing) condition.
    (B) Natural Drainage Areas and Hydromodification Management Control Areas.
    (C) Projects subject to Controls including Redevelopment Projects.
    (D) Description of authorized Hydromodification Management Controls.
    (E) Hydromodification Management Control Design Criteria.
    (F) Range of flows to control namely matching post development discharge rates and durations from critical flow on up to the pre-development 10-year peak flow (or equivalent alternative criteria).
    (G) Goodness of fit criteria.
    (H) Allowable low flow rate.
    (I) Description of the approved Hydromodification Model.
    (J) Any alternate Hydromodification Management Model and Design.
    (K) In-Stream Measures Design Criteria.
    (L) Record Keeping.

III. Post-Construction Storm Water Mitigation Criteria

1. Post-Construction Storm Water BMP Program and Project Applicability

(a) Each Permittee shall require that during the construction of a single-family hillside home, measures be taken to:
   (1) Conserve natural areas.
   (2) Protect slopes and channels.
   (3) Provide storm drain system stenciling and signage.
   (4) Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.
   (5) Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

(b) Each Permittee shall require that all development projects equal to 5,000 sq. ft. or greater of disturbed area be subject to conditioning and approval for the design and implementation of post-construction treatment controls and BMPs to mitigate storm water pollution.

Deleted: 1 acre

(c) Each Permittee shall require, in addition, that the following development projects be subject to conditioning and approval for the design and implementation of post-construction treatment controls and BMPs to mitigate storm water pollution:
   (1) Industrial park 5,000 square feet or more of surface area;
   (2) Commercial strip mall 5,000 square feet or more of surface area;
   (3) Retail gasoline outlet 5,000 square feet or more of surface area;
   (4) Restaurant (SIC 5812) 5,000 square feet or more of surface area;
   (5) Parking lot 5,000 square feet or more of surface area or with 25 or more parking spaces;
   (6) Streets, roads, highways, and freeway construction of 5,000 square feet or more of surface area;
   (7) Automotive service facilities (SIC 5013, 5014, 5541, 7532-7534 and 7536-7539) [5,000 square feet or more of surface area]; and
   (8) Redevelopment projects in subject categories that meet Redevelopment thresholds (identified below in section III.4).

(d) Each Permittee shall require, in addition, that post-construction BMPs be subject to conditioning and approval for the design and implementation of post-construction treatment controls and BMPs to mitigate storm water pollution at development projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:
   (1) Discharge storm water runoff that is likely to impact a sensitive biological species or habitat or
   (2) Create 2,500 square feet or more of impervious surface area.

Deleted: .

2. Tiered Numeric Water Quality Design Criteria

(a) **Projects disturbing land areas less than 50 acres**
Each Permittee shall require that post-construction treatment control BMPs incorporate, at a minimum, a volumetric and/or hydrodynamic (flow based) treatment control design standard, consistent with the objectives stated in Part 4. E.1. and as identified below to mitigate (infiltrate, filter or treat) storm water:

(1) Volumetric Treatment Control BMP
   (A) The 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in *Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998)*; or
   (B) The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment (Ventura County Technical Manual); or
   (C) The volume of runoff produced from a 0.75 inch storm event, prior to its discharge to a storm water conveyance system;[1] and/or

(2) Hydrodynamic (Flow Based) Treatment Control BMP
   (A) The flow of runoff produced from a rain event equal to at least 0.2 inches per hour intensity; or
   (B) The flow of runoff produced from a rain event equal to at least 2 times the 85th percentile hourly rainfall intensity for Ventura County; or
   (C) Ten percent of the 50-year storm design flow rate.

(b) **Projects disturbing land area of 50 acres or greater**
Each Permittee shall require that post-construction treatment control BMPs incorporate, at a minimum, a volumetric and/or hydrodynamic (flow based) treatment control design standard, consistent with the objectives stated in Part 4. E.1. and as identified above in Part 4.E.1(III)(2)(a)(1) and (2) to mitigate (infiltrate, filter or treat) storm water.

Each Permittee shall also require that post-construction treatment control BMPs be:

(1) Designed using an appropriate public domain hydrodynamic model (such as Storm Water Management Model (SWMM) 5 or Hydrologic

[1] This option is not available for construction projects that disturb land area 5 acres or greater.

Engineering Center – Hydrologic Simulation Program – Fortran (HEC-HSPF); and incorporate the following:
(A) Rainfall intensity based on hourly rainfall records;
(B) An adjustment factor for within hour rainfall variability; and
(C) Hydraulics of BMP Performance.

(2) Satisfy the objectives identified for storm water quality management identified in Part 4. E.1.

3. Site Specific Mitigation

(a) Each Permittee shall require the implementation of a site-specific plan to mitigate post-development storm water for new development and redevelopment projects not identified in Parts 4. E. III.1(b), III.1(c), and III.1(d), but which may potentially have adverse impacts on post-development storm water quality, where 1 or more of the following project characteristics exist:
(1) Vehicle or equipment fueling areas;
(2) Vehicle or equipment maintenance areas, including washing and repair;
(3) Commercial or industrial waste handling or storage;
(4) Outdoor handling or storage of hazardous materials;
(5) Outdoor manufacturing areas;
(6) Outdoor food handling or processing;
(7) Outdoor animal care, confinement, or slaughter; or
(8) Outdoor horticulture activities.

4. Redevelopment Projects

(a) Each Permittee shall apply the post-construction BMP requirements, or site specific requirements including post-construction storm water mitigation to all projects that undergo significant Redevelopment in their respective categories.

(b) Significant Redevelopment means land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.
(1) Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post development storm water quality control requirements, the entire project must be mitigated.

(2) Where Redevelopment results in an alteration to less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post development storm water quality control requirements, only the alteration must be mitigated, and not the entire development.

(c) Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways, is not considered a routine maintenance activity.

(d) Existing single-family structures are exempt from the Redevelopment requirements.

5. Maintenance Agreement and Transfer

(a) Each Permittee shall require that all development projects subject to post-construction BMP requirements and site specific plan requirements provide verification of maintenance provisions for Structural and Treatment Control BMPs, including but not limited to legal agreements, covenants, CEQA mitigation requirements, and/ or conditional use permits.

(1) Verification at a minimum shall include:

(A) The developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either

(B) A signed statement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance and that it meets all local agency design standards; or

(C) Written conditions in the sales or lease agreement, which requires the recipient to assume responsibility for maintenance and conduct a maintenance inspection at least once a year; or

(D) Written text in project conditions, covenants and restrictions (CCRs) for residential properties assigning maintenance responsibilities to the Home Owners Association (HOA) for maintenance of the Structural and Treatment Control BMPs; or

(E) Written conditions in the sales or lease agreement, which requires the recipient to assume responsibility for maintenance and conduct a maintenance inspection at least once a year; or

(F) Any other legally enforceable agreement that assigns responsibility for the maintenance of post-construction Structural or Treatment Control BMPs.

6. Development Planning Coordination and Enforcement

(a) Each Permittee shall implement a program to inspect and enforce on new development and redevelopment projects for post-construction control BMPs.

(1) Prior to approving and signing off for occupancy and issuing the Certificate of Occupancy for all new development and redevelopment projects subject to post-construction control BMPs, each Permittee shall inspect the constructed site design, Structural control and Treatment control BMPs to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and this Order.

(b) The State/ U.S. EPA permitting authority may undertake the following actions for coordination with the post-construction BMP provisions of the State construction activity storm water general permit or individual storm water construction permits.

(1) Absence of Post-Construction BMPs

(A) If the State/U.S. EPA inspection does not readily identify the implementation of post-construction control BMPs at the site, the Regional Water Board will start progressive enforcement action against the Permittee and/or project owner/developer.

(B) Failure to implement post-construction control BMPs, or implementing ineffective BMPs may be grounds for the State/U.S. EPA permitting authority to deny the Notice of Termination (NOT).

(2) Inadequate or Ineffective Post-Construction BMPs

(A) If the State/U.S. EPA inspection identifies the implementation of post-construction BMPs, but they are determined to be inadequate or ineffective (e.g. undersized, or non-specific to pollutants of concern, or poorly maintained), the Regional Water Board will start progressive enforcement action against the Permittee and/or project owner/developer.

(B) Implementation of inadequate or ineffective BMPs may be grounds for the State/U.S. EPA permitting authority to deny the Notice of Termination (NOT) for the project.

7. Regional and Redevelopment Area Storm Water Mitigation

(a) A Permittee or a coalition of Permittees may apply to the Regional Water Board for approval of a regional or sub-regional storm water mitigation program to substitute in part or wholly for on-site post-construction requirements. Upon review and a determination by the Regional Water Board Executive Officer that the proposal is technically valid and appropriate, the Regional Water Board may consider for approval such a program if its implementation will:
(1) Result in equivalent or improved storm water quality.
(2) Protect stream habitat.
(3) Promote cooperative problem solving by diverse interests.
(4) Be fiscally sustainable and has secure funding.
(5) Be completed in four years or less including the construction and start-up of treatment facilities.

(b) A Permittee may apply to the Regional Water Board for approval of a Redevelopment Project Area Master Plan (RPAMP) for redevelopment projects within Redevelopment Project Areas, in consideration of balancing the environment with the needs for adequate housing, population growth, public transportation and management, land recycling, and urban revitalization. The RPAMP may substitute in part or wholly for on-site post-construction requirements. Upon review and a determination by the Regional Water Board Executive Officer that the proposal is technically valid and appropriate, the Regional Water Board may consider for approval such a program if its implementation will result in equivalent or improved storm water quality.
(1) Redevelopment Project Areas include (a) City Center areas, (b) Historic Districts areas, (c) Brownfield areas, (d) Urban Transit Villages; and (e) any other redevelopment area so designated by the Regional Water Board.

(c) Nothing in these provisions shall be construed as to delay the implementation of post-construction control requirements, as approved in this Order.

8. Mitigation Funding

(a) The Permittees may propose a management framework, for approval by the Regional Water Board Executive Officer, to support regional or subregional solutions to storm water pollution, where any of the following situations occur:
(1) A waiver for impracticability is granted;
(2) Funds become available;

(3) Off-site mitigation is required because of loss of environmental habitat; or
(4) An approved watershed management plan, or an integrated water resources management plan, or a regional storm water mitigation plan, or a wetlands recovery plan exists that incorporates an equivalent or improved strategy for storm water pollution mitigation.

9. Inspection and Tracking System for Post-Construction Treatment Control BMPs

(a) Each Permittee shall develop and implement no later than (6 months from this Order's adoption) the following:
(1) A GIS or other electronic system for tracking projects that have been conditioned for post-construction treatment control BMPs. The electronic system, at a minimum, should contain the following information:
(A) Municipal Project ID.
(B) State WDID No.
(C) Project Acreage.
(D) BMP Type and Description.
(E) BMP Location (coordinates).
(F) Date of Acceptance.
(G) Date of O&M Certification.
(H) Maintenance Records.
(I) Inspection Date and Summary.
(J) Corrective Action.
(K) Date Certificate of Occupancy Issued.
(L) Replacement or Repair Date.
(2) A post-construction treatment control BMP inspection program to verify proper maintenance and operation of post-construction treatment control BMPs previously approved. The inspection program, at a minimum shall consist of the following elements:
(A) Post-construction treatment control BMP acceptance inspection to ensure proper installation.
(B) Post-construction treatment control BMP Inspection check list.
(C) Inspection at least once every 2 years, beginning (1 year after the Order's adoption), of post-construction treatment control BMPs to ensure treatment effectiveness, hydraulic function, and vector risk minimization, with particular attention to:
(i) Conventional Treatment BMPs - failure, invasive species vegetation, fugitive material, sediment clogging, and improper modifications.

(ii) Non-Proprietary Treatment Control BMPs – solids removal, pump-out, blockage and drawdown drainage;

(D) Criteria and procedures for Treatment Control BMP repair, replacement, or re-vegetation.

10. Developer Technical Guidance and Information

(a) The Ventura County Technical Guidance Manual for Storm Water Quality Control Measures shall be updated to include, at a minimum, the following:
(1) Hydrologic (Flow/Volume/Duration) Control criteria described herein and the interim criteria based on hydrograph matching.
(2) Expected BMP pollutant removal performance including consistent effluent quality and removal efficiency ranges (International BMP Database, technical reports and the scientific literature).
(3) Appropriate BMPs for storm water POCs.
(4) Data on Observed Local Effectiveness and performance of implemented BMPs.
(5) BMP Maintenance and Cost Considerations.
(6) Criteria to facilitate integrated water resources planning and management in the selection of BMPs, including water conservation, groundwater recharge, public recreation, multipurpose parks, open space preservation, and redevelopment retrofits.
(7) LID principles and specifications.

11. Project Review and Inter Department Coordination

(a) Each Permittee shall facilitate a process for effective approval of post-construction control measures. The process shall include:
(1) Detailed BMP review including BMP sizing calculations, BMP pollutant removal effectiveness, and municipal approval.
(2) An established structure for communication and delineated authority between and among municipal departments which have jurisdiction over project review, plan approval, and project construction through memoranda of understanding (MOU).

12. California Environmental Quality Act (CEQA) Document Update

(a) Each Permittee shall incorporate into its CEQA process, with immediate effect, procedures for considering potential storm water quality impacts and providing for appropriate mitigation when preparing and reviewing CEQA documents. The procedures shall require consideration of the following:
(1) Potential impact of project construction on storm water runoff.

(2) Potential impact of project post-construction activity on storm water runoff.
(3) Potential for discharge of storm water from areas from material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas.
(4) Potential for discharge of storm water to impair the beneficial uses of the receiving waters or areas that provide water quality benefit.
(5) Potential for the discharge of storm water to cause significant harm on the biological integrity of the waterways and water bodies.
(6) Potential for significant changes in the flow velocity or volume of storm water runoff that can cause environmental harm.
(7) Potential for significant increases in erosion of the project site or surrounding areas.

13. General Plan Update

(a) Each Permittee shall amend, revise or update its General Plan to include watershed and storm water quality and quantity management considerations and policies when any of the following General Plan elements are updated or amended:
(1) Land Use.
(2) Housing.
(3) Conservation.
(4) Open Space.

(b) Each Permittee shall provide the Regional Water Board with the draft amendment or revision when a listed General Plan element or General Plan is noticed for comment in accordance with Cal. Govt. Code § 65350 *et seq.*

F. Development Construction Program

Sediment losses due to erosion on construction sites are exacerbated during the wet season. Sediment is a primary pollutant impacting beneficial uses of watercourses. Sedimentation and siltation adversely affect fish spawning, and in time, alter aquatic habitat. Other pollutants including pesticides, herbicides, fertilizers, and metals, adsorb onto sediment particles and detrimentally impact biological systems and water quality.

1. Grading Prohibitions

(a) Each Permittee shall implement a program to control storm water discharges from construction activity at all construction sites within its jurisdiction. During the wet season, the program shall ensure that the following requirements are effectively implemented at all of the construction site categories listed below:
   (1) No grading shall occur between October 1 – April 15 (wet season) for construction projects in the following areas of high erosivity or receiving water impairment or sensitive habitat:
      (A) On hillsides with slopes 20% or steeper prior to land disturbance;
      (B) Directly discharging to a waterbody listed on the CWA § 303 (d) list for siltation or sediment; or
      (C) Within or adjacent to an environmentally sensitive area (ESAs).

(b) If grading operations in these areas are not completed before the onset of the wet season beginning October 1st, grading shall be halted and effective erosion control measures shall be put in place to minimize erosion. Grading shall not resume until after April 15th. Depending on the project area, the developer shall implement the Erosion and Sediment control BMPs listed in Tables 5, 6, and 7.
   (1) A Grading Prohibition Variance may be granted by the Regional Water Board Executive Officer, where the Permittee can demonstrate that BMP measures proposed by the project proponent and approved by the Permittee can be reasonably expected to:
      (A) Not cause or contribute to the degradation of water quality.
      (B) Ensure that Total Suspended Solids discharged is 100mg/L or less.
      (C) Ensure that Turbidity of the discharge is 50 NTU or less.
      (D) Not impair beneficial uses.
      (E) Includes a monitoring program to ensure effectiveness.

2. Construction Sites Less than an Acre
   (a) Each Permittee shall require the implementation of a minimum set of BMPs at all construction sites (see the following Table 5) to prevent erosion and sediment loss, and the discharge of construction wastes.[1] Where the Erosivity Factor (R) for the construction project is 50 or greater, erosion controls (erosion avoidance) will be the preferred BMPs.[2]

Table 5

[1] The BMPs are taken from the *California BMP Handbook, Construction, January 2003* and the *Caltrans Stormwater Quality Handbooks, Construction Site Best Management Practices (BMPs) Manual, March 2003*, and addenda.
[2] Fact Sheet, *Construction Rainfall Erosivity Waiver* (2001) EPA 833-F-00-014; *Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE)* (1997), USDA Agricultural Handbook No. 703.

Minimum Set of BMPs for All Construction Sites	CASQA Handbook	Caltrans Handbook
For Erosion Control		
Scheduling	EC-1	SS-1
Preservation of Existing Vegetation	EC-2	SS-2
Sediment Controls		
Silt Fence	SE-1	SC-1
Sand Bag Barrier	SE-8	SC-8
Non-Storm Water Management		
Water Conservation Practices	NS-1	NS-1
Dewatering Operations (Groundwater dewatering only under NPDES Permit No. CAG994004).[1]	NS-2	NS-2
Waste Management		
Material Delivery and Storage	WM-1	WM-1
Stockpile Management	WM-3	WM-2
Spill Prevention and Control	WM-4	WM-4
Solid Waste Management	WM-5	WM-5
Concrete Waste Management	WM-8	WM-8
Sanitary/Septic Waste Management	WM-9	WM-9

3. Construction Sites 1 acre or greater but Less than 5 acres

(a) Each Permittee shall require the implementation of the following BMPs (see the following Table 6) in addition to the ones identified in the preceding Table 5 at all construction sites 1 acre and greater but less than 5 acres to prevent erosion and sediment loss, and the discharge of construction wastes:

Table 6

BMPs	CASQA Handbook	Caltrans Handbook
For Erosion Control		
Hydraulic Mulch	EC-3	SS-3
Hydroseeding	EC-4	SS-4
Soil Binders	EC-5	SS-5
Straw Mulch	EC-6	SS-6
Geotextiles and Mats	EC-7	SS-7
Wood Mulching	EC-8	SS-8
Sediment Controls		
Fiber Rolls	SE-5	SC-5
Gravel Bag Berm	SE-6	SC-6
Street Sweeping and/or Vacuum	SE-7	SC-7
Storm Drain Inlet Protection	SE-10	SC-10
Additional Controls		
Wind Erosion Controls	WE-1	WE-1

[1] Ponded storm water may be discharged at a concentration of Total Suspended Solids (TSS) of 100mg/L or less.

Stabilized Construction Entrance/Exit	TC-1	TC-1
Stabilized Construction Roadway	TC-2	TC-2
Entrance/Exit Tire Wash	TC-3	TC-3
Non-Storm Water Management		
Vehicle and Equipment Washing	NS-8	NS-8
Vehicle and Equipment Fueling	NS-9	NS-9

Construction Sites 5 acres and Greater

(a) Each Permittee shall require the implementation of the following BMPs (see the following Table 7) in addition to the ones identified in the preceding Tables 5 and 6 at all construction sites 5 acres and greater to prevent erosion and sediment loss, and the discharge of construction wastes:

Table 7

BMPs	CASQA Handbook	Caltrans Handbook
Sediment Controls		
Sediment Basin	SE-2	SC-2
Check Dam	SE-4	SC-4
Tracking Control BMPs		
Stabilized Construction Entrance/Exit	TR-1	TC-1
Non-Storm Water Management		
Vehicle and Equipment Maintenance	NS-10	NS-10
Waste Management		
Material Delivery and Storage	WM-1	WM-1
Spill Prevention and Control	WM-4	WM-4
Concrete Waste Management	WM-8	WM-8
Sanitary/Septic Waste Management	WM-9	WM-9

4. Local Agency Requirements

(a) Each Permittee shall require for all construction sites 1 acre or greater, compliance with all conditions identified in the preceding F.1, F.2, F.3, and F.4, and the following requirements:
(1) Local Storm Water Pollution Prevention Plan (Local SWPPP),
(A) Each Permittee shall require the preparation and submittal of a Local SWPPP, for approval prior to issuance of a grading permit for construction projects.
(i) The Permittee shall approve no Local SWPPP unless it includes appropriate construction site BMPs and maintenance schedules.

(ii) A Local SWPPP may substitute for the State SWPPP if the Local SWPPP is at least as inclusive in controls and BMPs as the State SWPPP.

(iii) The Local SWPPP must include the rationale used for selecting or rejecting BMPs. The project architect, or engineer of record, or authorized qualified designee, must sign a statement on the Local SWPPP to the effect:

(iv) *"As the architect/engineer of record, I have selected appropriate BMPs to effectively minimize the negative impacts of this project's construction activities on storm water quality. The project owner and contractor are aware that the selected BMPs must be installed, monitored, and maintained to ensure their effectiveness. The BMPs not selected for implementation are redundant or deemed not applicable to the proposed construction activity."*

(2) Certification Statement

(A) Each Permittee shall require that each landowner or the landowner's agent sign a statement on the Local SWPPP to the effect:
"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that submitting false and/or inaccurate information, failing to update the Local SWPPP to reflect current conditions, or failing to properly and/or adequately implement the Local SWPPP may result in revocation of grading and/or other permits or other sanctions provided by law."

(B) The Local SWPPP certification shall be signed by the landowner as follows:

(i) Corporation - by a responsible corporate officer which means the following:

(I) President, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(II) Manager of the construction activity if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

(ii) Partnership or sole proprietorship - by a general partner or the proprietor; or
(iii) Municipality or other public agency - by an elected official, a ranking management official (e.g., County/City Administrative Officer, City Manager, Director of Public Works, or City Engineer).

6. Electronic Site Tracking System

(a) Each Permittee shall use an electronic system to track grading permits, encroachment permits, demolition permits, building permits, or construction permits (and any other municipal authorization to move soil and/or construct or destruct that involves land disturbance) issued by each Permittee. To satisfy this requirement, the use of a database or GIS system is encouraged, but not required.

7. Inspections

(a) Each Permittee shall inspect all construction sites for the implementation of storm water quality controls a minimum of once during the wet season. Concurrently, each Permittee shall ensure that:
(1) The Local SWPPP shall be reviewed for compliance with local codes, ordinances, and permits.
(2) For inspected sites that have not adequately implemented their Local SWPPP, a follow-up inspection to ensure compliance shall take place within 2 weeks.
(3) If compliance with municipal codes, ordinances, or permits has not been attained, the Permittee shall take additional enforcement actions to achieve compliance as specified in municipal codes.
(4) If compliance has not been achieved, and the site is also covered under a Construction Activities Storm Water General Permit (CASGP) or Small Linear Underground/Overhead Construction Projects General Permit (small LUPs), each Permittee shall notify the Regional Water Board for further joint enforcement actions in conformance with the procedures listed in section D.3.(d)- Interagency Coordination of this Order.

(b) Prior to approving and/or signing off for occupancy and issuing the Certificate of Occupancy for all construction projects subject to post-construction controls, each Permittee shall inspect the constructed site design, source control and treatment control BMPs to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and this Order. The initial/ acceptance BMP verification inspection does not constitute an operation and maintenance inspection, as required in sections E.III.7.(a)(1) and G.6.(g)(1).

8. State Conformity Requirements

(a) Each Permittee shall ensure that no grading permit, encroachment permit, demolition permit, building permit, electrical permit, or construction permit (or any other municipal authorization to move soil and/or construct or destruct that involves land disturbance) is issued for any project requiring coverage under the CASGP or Small LUP General Permit[1] unless:

(1) Proof of coverage under a State NPDES permit is demonstrated (a copy of a letter from the State Water Board showing a valid Waste Discharger Identification Number (WDID) for that site).

(2) Demonstration or Certification that a SWPPP has been prepared by the project developer. A Local SWPPP may substitute for the State SWPPP if the Local SWPPP is at least as inclusive in controls and BMPs as the State SWPPP.

(3) Proof of an updated NOI(s) and a copy of the modified SWPPP(s) at any time a transfer of ownership takes place for the entire development or portions of the common plan of development where construction activities are still on-going.

9. Interagency Coordination

(a) A Permittee may refer a violator to the Regional Water Board provided that the Permittee has made a good faith effort at progressive enforcement consistent with the preceding section F.7. At a minimum, the Permittee's good faith effort shall be documented with:

(1) A minimum of 2 follow-up inspection reports (inspections completed within 3 months).

(2) A minimum of 2 warning letters or NOVs.

(b) Referral of Non-filers under the CASGP or the Small LUP General Permit: Each Permittee shall refer non-filers (i.e., those projects which cannot demonstrate that they have a WDID number) under the CASGP or Small LUP General Permit, to the Regional Water Board, no later than 15 days after making a determination of failure to file. In making such referrals, Permittees shall include, at a minimum, the following documentation:

(1) Project location address.

[1] NPDES Permit No. CAS000005, Waste Discharge Requirements For Discharges of Storm Water Runoff Associated with Small Linear Underground/Overhead Construction Projects (Small LUP General Permit) for any linear land disturbing activity or activities (cumulatively) that will cause one acre or more of land disturbance but not more than 5 acres.

(2) Project description.
(3) Developer or owners name with complete mailing address.
(4) Project size.
(5) Records of communication with the developer or owner regarding filing requirements.

(c) Investigation of Complaints Regarding Facilities – Transmitted by the Regional Water Board Staff:
(1) Each Permittee shall initiate, within 1 business day,[1] an initial investigation of complaint(s) (other than non-storm water discharges) on the construction site(s) within its jurisdiction.
(A) The initial investigation shall include, at a minimum, an inspection on the facility and its perimeter to confirm the complaint and to determine if the site operator is effectively complying with the municipal storm water/urban runoff ordinances, and to oversee corrective action.

(d) Support of Regional Water Board Enforcement Actions – As directed by the Regional Water Board Executive Officer:
(1) Each Permittee shall support Regional Water Board enforcement actions by:
(A) Assisting in identification of current owners, operators, and lessees of properties and sites.
(B) Providing staff, when available, for joint inspections with Regional Water Board inspectors.
(C) Appearing to testify as witnesses in Regional Water Board enforcement hearings.
(D) Providing copies of inspection reports and other progressive enforcement documentation.

G. Public Agency Activities Program

Each Permittee shall implement a Public Agency Activities Program to minimize storm water pollution impacts from public agency activities. Public Agency requirements consist of:

- Sewage Systems Maintenance, Overflow, and Spill Prevention
- Public Construction Activities Management
- Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management/Municipal Operations
- Landscape and Recreational Facilities Management

[1] Permittees may comply with the Permit by taking initial steps (such as logging, prioritizing, and tasking) to "initiate" the investigation within that one business day. However, the Regional Water Board would expect that the initial investigation, including a site visit, to occur within four business days.

- Storm Drain Operation and Management
- Streets and Roads Maintenance
- Infrastructure Maintenance - Long-term
- Public Industrial Activities Management
- Emergency Procedures
- Employee Training

1. Sewage System Maintenance, Overflow, and Spill Prevention Response Plan

   (a) Each Permittee shall implement a response plan for overflows of the sanitary sewer system within their respective jurisdiction. The response Plan shall clearly identify agencies responsible and telephone numbers and email for any contact and shall contain at a minimum of the following procedures for:
   (1) Investigation of any complaints received within 24 hours of the incident report.
   (2) Response within two hours to overflows for containment upon notification.
   (3) Notification to appropriate sewer and public health agencies and the Office of Emergency Services (OES) when a sewer overflows to the MS4. This requirement includes notification to the affected public health agencies that are mandated to monitor beach conditions, within 2 hours in case a spill has the potential to be discharged through the MS4 into coastal beaches.

   (b) Each Permittee which owns and/or operates a sanitary sewer system, shall in addition to the preceding section 1(a), also implement the following requirements:
   (1) Identify, repair, and remediate sanitary sewer blockages, exfiltration, overflow, and wet weather overflows from sanitary sewers to the MS4.
   (2) Implement procedures and maintenance on schedules to prevent sewage spills or leaks from sewage facilities from entering the MS4.

   (c) Each Permittee with septic systems in their jurisdiction shall implement a response plan for overflows of septic system leachate to surface waters within their respective jurisdiction, and shall consist, at a minimum, of the following:
   (1) Investigation of any complaints received.
   (2) Response within two hours to overflows for containment, upon notification.
   (3) Notification within 24 hours to appropriate agencies and public health agencies when a septic system fails and flows to the MS4.

   (d) In addition, Regional Water Board expects that the municipal departments that have responsibilities to implement the MS4 NPDES permit, other individual NPDES permits that may contain spill prevention, sewer maintenance, pretreatment programs and the SSO WDR will coordinate their compliance activities for consistency and efficiency.

2. Public Construction Activities Management

(a) Each Permittee shall implement and comply with the Development Planning Program requirements in Part 4. E of this Order at all Permittee owned or operated public construction projects.
(b) Each Permittee shall implement and comply with the Development Construction Program requirements in Part 4.F. of this Order at all Permittee owned or operated construction projects.

(c) Each Permittee shall obtain coverage under the CASGP for construction activities and projects that are:
(1) Covered under 1 (or more) Capital Improvement Projects (including but not limited to street repaving, new streets, channel clearing[1]) or contract, and that individually or cumulatively disturb 1 acre or more of land; or
(2) Less than 1 acre, but are part of a larger common plan of development that in total disturbs 1 or more acres of land; and
(3) Linear construction project(s) that disturb 5 or more acres of land.

(d) Each Permittee shall obtain coverage under the Small LUP General Permit when disturbing at least 1 acre, but less than 5 acres of land during linear construction (land area includes trenching and staging areas).

3. Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management/Long Term Maintenance Programs.

(a) Each Permittee shall implement the following BMPs[2] at all Permittee owned, leased facilities and job sites including but not limited to vehicle/ equipment maintenance facilities, material storage facilities, and corporation yards, and at any area that includes the activities as described in the following Tables. Additionally, for any activity or area described in the footnote below,[3] each Permittee shall also implement the BMPs in the Caltrans Storm Water Quality Handbook Maintenance Staff Guide described as B-4 in Table 8.

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[1] A CWA §401 certification may be required separately from the Regional Water Board for activities that occur within or adjacent to Waters of the U.S.. The Permittee shall obtain all necessary permits and certifications from the State and federal permitting authorities before commencing soil disturbing activities.
[2] These BMPs are identified in Appendix B of the *Caltrans Storm Water Quality Handbook Maintenance Staff Guide, May 2003*, and its addenda.
[3] Scheduling and Planning; Spill Prevention and Control; Sanitary/Septic Waste Management; Material Use; Safer Alternative Products; Vehicle/Equipment Cleaning, Fueling, and Maintenance; Illicit Connections Detection, Reporting and Removal; Illegal Spill / Discharge Control and Maintenance Facility Housekeeping Practices.

Table 8

From the Caltrans Storm Water Quality Handbook Maintenance Staff Guide

GENERAL BMPS	B-4
Flexible Pavement	B-9
Asphalt Cement Crack and Joint Grinding/Sealing	B-9
Asphalt Paving	B-10
Structural Pavement Failure (Digouts) Pavement Grinding and Paving	B-11
Emergency Pothole Repairs	B-13
Sealing Operations	B-14
Rigid Pavement	B-15
Portland Cement Crack and Joint Sealing	B-15
Mudjacking and Drilling	B-16
Concrete Slab and Spall Repair	B-17
Slope/Drains/Vegetation	B-19
Shoulder Grading	B-19
Nonlandscaped Chemical Vegetation Control	B-21
Nonlandscaped Mechanical Vegetation Control/Mowing	B-23
Nonlandscaped Tree and Shrub Pruning, Brush Chipping, Tree and Shrub Removal	B-24
Fence Repair	B-25
Drainage Ditch and Channel Maintenance	B-26
Drain and Culvert Maintenance	B-28
Curb and Sidewalk Repair	B-30
Litter/Debris/Graffiti	
Sweeping Operations	B-32
Litter and Debris Removal	B-33
Emergency Response and Cleanup Practices	B-34
Graffiti Removal	B-36
Landscaping	B-37
Chemical Vegetation Control	B-37
Manual Vegetation Control	B-39
Landscaped Mechanical Vegetation Control/Mowing	B-40
Landscaped Tree and Shrub Pruning, Brush Chipping, Tree and Shrub Removal	B-41
Irrigation Line Repairs	B-42
Irrigation (Watering), Potable and Nonpotable	B-43
Environmental	B-44
Storm Drain Stenciling	B-44
Roadside Slope Inspection	B-45
Roadside Stabilization	B-46
Storm Water Treatment Devices	B-48
Traction Sand Trap Devices	B-49
Public Facilities	B-50
Public Facilities	B-50
Bridges	B-52
Welding and Grinding	B-52

Sandblasting, Wet Blast with Sand Injection and Hydroblasting	B-54
Painting	B-56
Bridge Repairs	B-57
Draw Bridge Maintenance	B-58
Other Structures	B-59
Pump Station Cleaning	B-59
Tube and Tunnel Maintenance and Repair	B-61
Ferryboat Operations	B-62
Tow Truck Operations	B-63
Toll Booth Lane Scrubbing Operations	B-64
Electrical	B-65
Sawcutting for Loop Installation	B-65
Traffic Guidance	B-67
Thermoplastic Striping and Marking	B-67
Paint Striping and Marking	B-68
Raised/Recessed Pavement Marker Application and Removal	B-70
Sign Repair and Maintenance	B-71
Median Barrier and Guard Rail Repair	B-73
Emergency Vehicle Energy Attenuation Repair	B-75
Snow and Ice Control	B-76
Snow Removal	B-76
Ice Control	B-77
Storm Maintenance	B-78
Minor Slides and Slipouts Cleanup/Repair	B-78
Management and Support	B-80
Building and Grounds Maintenance	B-80
Storage of Hazardous Materials (Working Stock)	B-82
Material Storage Control (Hazardous Waste)	B-84
Outdoor Storage of Raw Materials	B-85
Vehicle and Equipment Fueling	B-86
Vehicle and Equipment Cleaning	B-87
Vehicle and Equipment Maintenance and Repair	B-88
Aboveground and Underground Tank Leak and Spill Control	B-90

(b) Each Permittee shall obtain coverage under the CASGP no later than (7 days of adoption of Order 07-xxx) [Note: Refer Here To Ventura Permit Adoption Date Only]) for long-term maintenance programs including maintenance of flood control channels (such as vegetation removal), maintenance or replacement of streets, sidewalks, roads, and any other project that the Permittee undertakes including all Capital Improvement Projects (CIP) if either 1 or more acres of land are disturbed by grading, clearing or excavation activities for an individual project or cumulatively as part of several projects involving a soil disturbance.

4. Vehicle and Equipment Wash Areas

(a) Each Permittee shall eliminate discharges of wash waters from vehicle and equipment washing no later than (365 days after permit adoption) by implementing any of the following measures at existing facilities with vehicle or equipment wash areas:
   (1) Self-contain, and haul off for disposal;
   (2) Equip with a clarifier;
   (3) Equip with an alternative pre-treatment device; or
   (4) Plumb to the sanitary sewer.

(b) Any municipal facilities constructed, redeveloped, or replaced shall have all vehicle and equipment wash areas plumbed to the sanitary sewer or be self contained and all wastewater/washwater hauled for legal disposal.

5. Landscape, Park, and Recreational Facilities Management

(a) Integrated Pest Management (IPM)
Each Permittee shall implement a jurisdiction-wide IPM program (an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties.) and ensure that:
   (1) Pesticides are used only if, after monitoring indicates they are needed according to established guidelines.
   (2) Treatments are made with the goal of removing only the target organism.
   (3) Pest controls are selected and applied in a manner that minimizes risks to human health, beneficial, non-target organisms, and the environment.
   (4) Its use of pesticides, including Organo-phosphates and Pyrethroids do not threaten water quality.
   (5) Partner with other agencies and organizations to ensure that pesticide use within their jurisdiction does not threaten water quality.
   (6) Adopt and verifiably implement policies, procedures, and/or ordinances requiring the minimization of pesticide use and encouraging the use of IMP techniques (including beneficial insects) in the Permittees' overall operations and on municipal property.
   (7) Policies, procedures, and ordinances shall include commitments and timelines to reduce and ultimately eliminate the use of pesticides that cause impairment of surface waters by implementing the following procedures:
      (A) Quantify pesticide use by its staff and hired contractors.
      (B) Prepare and annually update an inventory of pesticides used by all internal departments, divisions, and other operational units.
      (C) Demonstrate reductions in pesticide use.

(b) Each Permittee shall implement the following requirements no later than (180 days following permit adoption):

(1) Use a standardized protocol for the routine and non-routine application of pesticides, herbicides (including pre-emergents), and fertilizers.

(2) Comply with the provisions and the monitoring requirements for application of aquatic pesticides to surface waters (WQ Order No. 2004-0008-DWQ).

(3) Ensure no application of pesticides, herbicides or fertilizers are applied to an area immediately prior to, during, or immediately after a rain event, or when water is flowing off the area.

(4) Ensure that no banned or unregistered pesticides and herbicides are stored or applied.

(5) Ensure that all staff applying pesticides are certified by the California Department of Food and Agriculture, or are under the direct supervision of a certified pesticide applicator.

(6) Implement procedures to encourage the retention and planting of native vegetation to reduce water, pesticide, herbicide and fertilizer needs; and

(7) Store pesticides, herbicides and fertilizers indoors or under cover on paved surfaces or use secondary containment.

(A) Reduce the use, storage, and handling of hazardous materials to reduce the potential for spills.

(B) Regularly inspect storage areas.

6. Storm Drain Operation and Management

(a) Catch Basin Cleaning

(1) Each Permittee shall designate catch basin inlets within its jurisdiction as one of the following:

Priority A: Catch basins that are designated as consistently generating the highest volumes of trash and/or debris.

Priority B: Catch basins that are designated as consistently generating moderate volumes of trash and/or debris.

Priority C: Catch basins that are designated as generating low volumes of trash and/or debris.

(2) Each Permittee shall clean catch basins according to the following schedule:

Priority A: A minimum of 3 times during the wet season and once during the dry season every year.

Priority B: A minimum of once during the wet season and once during the dry season every year.

Priority C: A minimum of once per year.

(3) In addition to the preceding schedule, Permittees shall ensure that any catch basin that is at least 25% full of trash and/or debris shall be cleaned out.

(b) Trash Management at Public Events
  (1) Each Permittee shall require for any event in the public right of way or wherever it is foreseeable that substantial quantities of trash and litter may be generated, that the following measures be implemented:
    (A) That conditions be placed on any special use permit issued for such event; and
    (B) Require the proper management of trash and litter generated; and
    (C) Arrange for temporary screens to be placed on catch basins; or
    (D) Clean out catch basins, trash receptacles, and grounds in the event area within 24 hours subsequent to the event.

(c) Trash Receptacles
  (1) Each Permittee shall install trash receptacles at all transit stops in commercial areas and near schools within its jurisdiction no later than (6 months from the Order's adoption).
  (2) Each Permittee shall ensure that all trash receptacles are cleaned out and maintained as necessary to prevent trash overflow.

(d) Catch Basin Labels
  (1) Each Permittee shall inspect the legibility of the catch basin stencil or label nearest each catch basin and inlet before the rainy season begins.
  (2) Each Permittee shall record and re-stencil or re-label within 15 days of inspection, catch basins with illegible stencils.

(e) Catch Basin Excluders
  (1) Each Permittee shall install trash excluders, or similar devices on catch basins to prevent the discharge of trash to the storm drain system on all catch basin inlets no later than (180 from permit adoption).

(f) Storm Drain Maintenance
  (1) Each Permittee shall implement a program for Storm Drain Maintenance no later than (180 days after permit adoption) that includes the following:
    (A) Visual monitoring of Permittee-owned open channels and other drainage structures for debris at least annually.
    (B) Annually, based on the monitoring in the preceding section 6.(a), identify and prioritize problem areas of illicit discharge for regular inspection.
    (C) Conduct a review of maintenance activities to assure that the most appropriate storm water BMPs are being utilized to protect water quality.
    (D) Remove trash and debris from open channel storm drains a minimum of once per year before the storm season.

(E) Eliminate the discharge of contaminants during MS4 maintenance and clean outs.
(F) Quantify the amount of materials removed using standard measures and ensure the materials are properly disposed of.

(g) Permittee Owned Treatment Control BMPs
(1) Each Permittee shall implement an inspection and maintenance program for all Permittee owned treatment control BMPs, including post-construction treatment control BMPs.
(2) Each Permittee shall ensure proper operation of all treatment control BMPs and maintain them as necessary for proper operation, including post-construction treatment control BMPs.
(3) Any residual water within a treatment control BMP when being maintained shall be:
(A) Hauled away and legally disposed of;
(B) Discharged to the sanitary sewer system (with permits or authorization); or
(C) Treated to remove bacteria, sediments, nutrients, and meet the limitations set in Table 9 prior to discharge to the MS4.

Table 9

Discharge Limitations for Dewatering Treatment BMPs[1]

Parameter	Units	Limitation
Total Dissolved Solids	mg/L	1550
Nitrogen (Nitrate-nitrogen plus nitrite nitrogen)	mg/L	8
Total Suspended Solids	mg/L	100
Turbidity	NTU	50
Oil and Grease	mg/L	10
TPH	µg/L	100
COD	mg/L	120
Cu	µg/L	22.1
Pb	µg/L	12.8
Ni	µg/L	100
Zn	µg/L	170
E. Coli	per 100 ml	235 (fresh water)
Fecal Coliform	per 100 ml	400 (fresh water)

7. Streets and Roads

[1] Limits are from the Water Quality Control Plan Los Angeles Region (Basin Plan) and U.S. EPA Benchmark Values.

(a) Maintenance
   (1) Each Permittee shall perform street sweeping of curbed streets in commercial areas to control trash and debris at least 2 times per month.

(b) Road Construction and Reconstruction
   (1) Each Permittee shall implement the following BMPs for road reconstruction:
      (A) Drain Inlet protection from sediments.
      (B) Dewatering of below grade construction areas.
      (C) Secondary containment for cold mix.
      (D) Sheeting underneath cold mix (during storage) to prevent discharge of spray release, and
      (E) Sheeting to cover cold mix (during storage).
      (F) If street material is to be concrete, then provide a vehicle wash off area that is isolated from the MS4.

8. Infrastructure Maintenance - Long-term

(a) Each Permittee shall obtain coverage under the CASGP for all long-term maintenance programs including but not limited to any project under the Capital Improvement Program (CIP) including but not limited to: pavement replacement; sidewalk replacement; channel maintenance; roadside maintenance (such as: vegetation removal); or grading, clearing or excavation activities that disturb 1 or more acres of land either for an individual project or as part of a long-term city/county plan that may be less.

9. Public Industrial Activities Management

(a) Each Permittee shall obtain separate coverage under the IASGP for any municipal activity subject to U.S. EPA regulations at CFR 122.26 for the discharge of storm water associated with industrial activity. These facilities include, but are not limited to:
   (1) Publicly owned wastewater treatment plants with a design flow of 1 MGD or more or required to have an approved pretreatment program under 40 CFR 403.
   (2) Landfills that receive or have received industrial waste or subject to regulation under Subtitle D of EPRCA.
   (3) Hazardous Waste Treatment, Storage and Disposal Facilities.
   (4) Steam Electric Power Generating Facilities.
   (5) Airports (SIC Major Group 45).
   (6) Ports (SIC Major Group 44).
   (7) Local and Suburban Transit (SIC Major Group 41).

10. Municipal Potable Water Supply System and Distribution De Minimus Discharges

    (a) Each Permittee which owns or operates or maintains a potable water supply system(s) and which performs maintenance of that system by flushing hydrants or other system components, may discharge such waters to the storm drain system provided:
        (1) The total volume of discharges annually is no more than 100,000 gallons[1] for the system per year.
        (2) BMP(s) are implemented to ensure that:
            (A) Chlorine concentration of the discharge is 0.1mg/L or less[2].
            (B) Turbidity is at 50 NTUs or less so as to minimize the discharge of sediment.
            (C) No erosion is caused down side of the discharge.

11. Emergency Procedures

    (a) Each Permittee may conduct repairs of essential public service systems and infrastructure in emergency situations with a self-waiver of the provisions of this Order. An emergency is a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. "Emergency" includes such occurrences as fire, flood, earthquake, or other soil or geologic movements, as well as such occurrences including riot, accident, or sabotage.
        (1) Where the self-waiver has been invoked, the Permittee shall submit to the Regional Water Board Executive Officer a statement of the occurrence of the emergency, an explanation of the circumstances, and the measures that were implement to reduce the threat to water quality, no later than 7 business days after the situation of emergency has passed.

12. Municipal Employee and Municipal Contractor Training

    (a) Each Permittee shall, no later than (6 months from the permit adoption and annually thereafter before June 30), train all of their employees and contractors in targeted positions (whose interactions, jobs, and activities affect storm water quality) on the requirements of the overall storm water management program to:

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[1] If greater than 100,000 gallons per year, then coverage under a separate NPDES permit from the Regional Water Board (NPDES Permit No. CAG674001) is required.
[2] BMPs for dechlorination include the addition of Sodium Thiosulfate per manufacturer specifications, or aeration that will reduce residual chlorine concentration in water to 0.1mg/L or less.

(1) Promote a clear understanding of the potential for activities to pollute storm water.
(2) Identify opportunities to require, implement, and maintain appropriate BMPs in their line of work.

(b) Each Permittee shall, no later than (6 months from the permit adoption and annually thereafter before June 30), train all of their employees and contractors who use or have the potential to use pesticides, herbicides or fertilizers (whether or not they normally apply these as part of their work). Training programs shall address:
(1) The potential for pesticide-related surface water toxicity.
(2) Proper use, handling, and disposal of pesticides.
(3) Least toxic methods of pest prevention and control, including IPM.
(4) Reduction of pesticide use.

(c) Each Permittee shall, no later than (6 months from the permit adoption) and annually thereafter before June 30, train all of their employees and contractors who are responsible for illicit connections and illicit/illegal discharges. Training programs shall address:
(1) Identification.
(2) Investigation.
(3) Termination.
(4) Cleanup.
(5) Reporting of Incidents.
(6) Documentation of Incidents.

H. Illicit Connections and Illicit Discharges Elimination Program

Each Permittee shall eliminate all Illicit Connections and Illicit Discharges (IC/ID) to the storm drain system, and shall document, track, and report all such cases in accordance with the elements and performance measures specified in the following subsections.

1. General

(a) Implementation - Each Permittee shall implement an IC/ID Program. The IC/ID procedures shall be documented and made available for review.

(b) Tracking - All Permittees shall, no later than (2 years after the adoption of this Order), map at a scale and in a format specified by the Principal Permittee all permitted connections to their storm drain system. All Permittees shall map at a scale and in a format specified by the Principal Permittee incidents of illicit connections and discharges on their baseline maps, and shall transmit this

information to the Principal Permittee no later than (2 years after the adoption of this Order). Permittees shall use this information to identify priority areas for further investigation and elimination of IC/ID.

2. Public Reporting

(a) Permittees shall establish and maintain a phone hotline and internet site to receive all reports of IC/ID complaints.

(b) Permittees shall document the location of the reported IC/ID and the actions undertaken in response to all IC/ID complaints.

3. Illicit Connections

(a) Screening for Illicit Connections

(1) The Permittees shall submit to the Principal Permittee:

(A) A GIS layer showing the location and length of underground pipes 18 inches and greater in diameter, and channels within their jurisdiction in accordance with the following schedule:

(i) All channeled portions of the storm drain system no later than (365 days after the adoption of this Order).

(ii) All portions of the storm drain system consisting of storm drain pipes 36 inches in diameter or greater, (no later than 3 years after the adoption of this Order).

(iii) All portions of the storm drain system consisting of storm drain pipes 18 inches in diameter or greater, (no later than 5 years after the adoption of this Order).

(B) The status of suspected, confirmed, and terminated illicit connections.

(2) Permittees shall conduct field screening of their storm drain systems in accordance with screening procedures described in the Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments (2004).[1] Permittees shall conduct field screening for illicit connections in accordance with the following schedule:

(A) All portions of the storm drain system consisting of storm drain pipes 36 inches in diameter or greater no later than (5 years after the adoption of this Order).

(B) High priority areas identified during the mapping of illicit connections and discharges no later than (5 years after the adoption of this Order).

[1] *Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments*. the Center for Watershed Protection, Pitt R., October 2004. Chapter 13, 13.1,13.2, 13.3, 13.4

(C) All portions of storm drain systems 50 years or older in age no later than (5 years after the adoption of this Order).

(3) Each Permittee shall maintain a list containing all connections under investigation for possible illicit connection and their status.

(b) Response to Illicit Connections

(1) Investigation -
Upon discovery or upon receiving a report of a suspected illicit connection, a Permittee shall complete an investigation within 21 days, to determine the following:
(A) Source of the connection.
(B) Nature and volume of discharge through the connection.
(C) Responsible party for the connection.

(2) Termination -
Upon confirmation of an illicit storm drain connection, a Permittee shall ensure the following:
(A) Termination of the connection within 180 days of completion of the investigation, using formal enforcement authority to eliminate the illicit connection.

(3) Documentation -
Permittees shall keep records of all illicit connection investigations and the formal enforcement taken to eliminate all illicit connections.

4. Illicit Discharges

(a) Investigation -
The Permittees shall investigate an illicit/illegal discharge during or immediately following containment and cleanup activities, and shall take formal enforcement action to eliminate the illegal discharge.

(b) Abatement and Cleanup -
Each Permittee shall respond, within 1 business day of discovery or a report of a suspected illicit/illegal discharge, with actions to abate, contain, and clean up all illegal discharges, including hazardous substances.

(c) Documentation -
Permittees shall maintain records of all illicit/illegal discharge discoveries, reports of suspected illicit/illegal discharges, their response to the illicit/illegal discharges and suspected illicit/illegal discharges, and the formal enforcement taken to eliminate all illicit/illegal discharges.

I. REPORTING PROGRAM

1. The Principal Permittee in consultation with the Permittees and Regional Water Board staff shall convene an adhoc working group to develop an Electronic Reporting Program, the basis of which shall be the questions in the attached Monitoring Report and Program Report (Reporting Program- Attachment "H") for approval by the Regional Water Board Executive Officer. The Committee shall no later than (6 months of permit adoption):

   (a) Develop an electronic reporting format.

   (b) Include requirements as basis for reporting.

2. Each Permittee shall submit information required in the Reporting Program in a method as appropriate to the format approved by the Regional Water Board Executive Officer.

3. The Principal Permittee shall submit by December 15th of each year beginning the year of 2007, an Annual Report to the Regional Water Board Executive Officer in the form of one hard copy and three compact disk (CD) copies (or an electronic equivalent).

4. The Annual Report shall document the status of the General Storm Water Program, an integrated summary of the results of analyses from:
   (a) The monitoring program described under Part 1- Monitoring Report.

   (b) The requirements described under Part 2-Program Report.

5. Plans shall be submitted to the Regional Water Board Executive Officer in the form of a hard copy and on a compact disk (CD), submit 1 hard copy and 3 CD copies.

6. Study Reports shall be submitted to the Regional Water Board Executive Officer in the form of a hard copy and on a CD, submit 1 hard copy and 3 CD copies.

7. Progress Reports shall be submitted to the Regional Water Board Executive Officer in the form of a hard copy and on a CD, submit 1 hard copy and 3 CD copies.

PART 5 - WATERSHED ECOLOGICAL RESTORATION PLANNING

Restoration of a degraded aquatic ecosystem to a close approximation of its remaining natural potential is a complex process that requires planning, implementation, monitoring, and management. The purpose of ecological restoration planning is to provide a tool that can

produce improvements in the quality of our water resources to support diverse, productive communities of plants and animals that provide significant ecological and social benefits.[1]

1. The Permittees shall develop and implement Watershed Ecological Restoration Plans (ERP) and submit Annual Watershed Ecological Restoration Status Reports (ERSR) in accordance with the requirements in Part 5 of this Order.

2. The Permittees shall develop ERPs for all Watershed Management Areas' (WMA) stream segments that have obtained a score of "poor" and "very poor" from Bioassessment Monitoring (Attachment "F", section E).

3. The ERPs shall include the following Restoration Principles:[2]
   (a) Preserve and protect aquatic resources.
   (b) Restore ecological integrity.
   (c) Restore natural structure.
   (d) Restore natural function.
   (e) Work within the watershed and broader landscape context.
   (f) Understand the natural potential of the watershed.
   (g) Address ongoing causes of degradation.
   (h) Develop clear, achievable, and measurable goals.
   (i) Focus on feasibility.
   (j) Use a reference site.
   (k) Anticipate future changes.
   (l) Involve the skills and insights of a multi-disciplinary team (such as: Wetlands Recovery Project and Ventura County Task Force of the Wetlands Recovery Project).
   (m) Design for self-sustainability.
   (n) Use passive restoration, when appropriate.
   (o) Restore native species and avoid non-native species.
   (p) Use natural fixes and bioengineering techniques, where possible.
   (q) Monitor and adapt where changes are necessary.

4. Permittees within WMA, shall develop ERP for the degraded stream segments of the Ventura River, Santa Clara River and Calleguas Creek, according to the following schedule:

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[1] U.S. EPA, 1995. *Ecological Restoration.* EPA841-F-95-007. Office of Water (4501F) United States Environmental Protection Agency, Washington, DC.
[2] U.S. EPA, 2000. *Principles for the Ecological Restoration of Aquatic Resources.* EPA841-F-00-003. Office of Water (4501F) United States Environmental Protection Agency, Washington, DC. 4 pp.

(a) Starting with the Ventura River, a Watershed ERP is to be developed and implemented for all river segments with a score of "poor" and "very poor" within 18 months from adoption of this Order and submitted to the Regional Water Board Executive Officer for approval.

(b) An ERP for the Santa Clara River and Calleguas Creek are to be developed and implemented for all river segments with a score of "poor" and "very poor" within 18 months from the end of their second monitoring year and submitted to the Regional Water Board Executive Officer for approval.

5. The Permittees shall submit Annual ERSR on the WMA ERP, which shall to include:
   (a) Background information.
   (b) Evaluation of site conditions.
   (c) Progress towards goals summarized and linked to specific stressors and measurements endpoints.
   (d) Bioassessment monitoring assessment(s).

PART 6 - TOTAL MAXIMUM DAILY LOAD PROVISIONS

Total Maximum Daily Loads (TMDL) are numerical calculations of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing points (Waste Load Allocation) and non-point sources (Load Allocation). Municipal storm water discharges are considered a point source and have been assigned a WLA for certain pollutants. The objective of the TMDL is to restore the waterbody to the highest beneficial use or potential beneficial use designated by the Regional Water Board.

This Order incorporates MS4 WLAs that have been adopted by the Regional Water Board and have been approved by the Office of Administrative Law and the U.S. EPA. The WLAs in the Order are expressed either as a numerical limitation, or a suite of BMPs that have been determined as providing a reasonable expectation that the WLAs will be achieved for wet weather flows, or as a prohibition for dry weather flows. Permittees shall implement all control measures to achieve the TMDL WLA(s) as stated in the TMDL by the WLA(s) effective date(s).

1. **Watershed - Pollutant**
   Santa Clara River and its Tributaries' (Reach 3) - Nitrogen Compounds (Ammonia and Nitrate plus Nitrite).

   (a) WLA Implementation
   (1) Prohibition:
   Permittees (Ventura County Watershed Protection District, and the Cities of Santa Paula and Fillmore) in the Santa Clara River and its Tributaries' (Reach 3) shall conduct field screening of their storm drain systems, in accordance with screening procedures documented in *Illicit Discharge Detection and Elimination.*[1] Permittees shall conduct field screening for illicit connections in accordance with the following schedule:
   (A) All portions of the storm drain system consisting of storm drain pipes and open channels/drains 12 inches in diameter or greater within 5 years after the adoption of this Order.
   (B) All portions of the storm drain system in subwatersheds with more than 5% of the area containing industrial sites 40 years or older within 5 years after the adoption of this Order.
   (C) All portions of the storm drain system in subwatersheds that had septic systems but have been connected to a sanitary system since January 1976 within 5 years after the adoption of this Order.
   (D) All portions of the storm drain system in subwatersheds with a density of more than 20 outfalls per channel mile within 5 years after the adoption of this Order.
   (E) All portions of the storm drain system in subwatersheds with a density of 10 or more hazardous waste generators and/or 5 or more industrial NPDES storm water sites per square mile within 5 years after the adoption of this Order.
   (2) Numerical Limits:
   The WLAs are expressed as numerical limits in-stream for Ammonia and Nitrate within the Santa Clara River and its Tributaries' Watershed (Reach 3), established for its MS4 Permittees are following:
   (A) MS4 Permittees shall not exceed water quality objectives in the Water Quality Control Plan Los Angeles Region (Basin Plan), the Ocean Plan, and the California Toxics Rule (CTR) for both acute and chronic criteria for Ammonia and Nitrate plus Nitrite.

[1] *Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments*. the Center for Watershed Protection, Pitt R., October 2004. Chapter 13, 13.1,13.2, 13.3, 13.4

2. **Watershed - Pollutant**
Malibu Creek and Lagoon - Bacteria

(a) WLA Implementation

(1) Prohibition:
MS4 Permittees (Ventura County Watershed Protection District, County of Ventura, and the Cities of Simi Valley and Thousand Oaks) discharging to Malibu Creek and Lagoon shall conduct field screening of their storm drain systems, in accordance with screening procedures documented in *Illicit Discharge Detection and Elimination*.[1] Permittees shall conduct screening for illicit connections in accordance with the following schedule:

(A) All portions of the storm drain system consisting of storm drain pipes 12 inches in diameter of greater within 5 years after the adoption of this Order.

(B) All portions of the storm drain system in subwatersheds with more than 5% of the area containing industrial sites 40 years or older within 5 years after the adoption of this Order.

(C) All portions of the storm drain system in subwatersheds that had septic systems but have been connected to a sanitary system since January 1976 within 5 years after the adoption of this Order.;

(D) All portions of the storm drain system in subwatersheds with a density of more than 20 outfalls per channel mile within 5 years after the adoption of this Order.

(E) All portions of the storm drain system in subwatersheds with a density of 10 or more hazardous waste generators and/or 5 or more industrial NPDES storm water sites per square mile within 5 years after the adoption of this Order.

(2) Numerical Limits:
The WLAs are expressed as exceedence days in-stream for Bacteria within Malibu Creek and Lagoon Watershed, established for its MS4 Permittees are the following (see Table 10):

[1] *Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments*. the Center for Watershed Protection, Pitt R., October 2004. Chapter 13, 13.1,13.2, 13.3, 13.4.

Table 10

Bacteria (ml) in-stream

Weather	**Summer Dry (April 1 - October 31)**
WLA	Daily Exceedence Sampling Days = 0 Weekly Exceedence Sampling Days = 0
Weather	**Winter Dry (November 1 - March 31)**
WLA	Daily Exceedence Sampling Days = 3 Weekly Exceedence Sampling Days = 1
Weather	**Wet (November 1 - October 31)**
WLA	Daily Exceedence Sampling Days = 17 Weekly Exceedence Sampling Days = 3
Marine Water	
Geometric Mean	Total coliform density not to exceed 1,000/100 ml
	Fecal coliform density not to exceed 200/100ml
	Enterococcus density not to exceed 35/100 ml
Single Sample	Total coliform density not to exceed 1,000/100 ml
	Fecal coliform density not to exceed 200/100ml
	Enterococcus density not to exceed 35/100 ml
	Total coliform density not to exceed 1,000/100 ml, if the ratio of fecal-to-total coliform >.1
Fresh Water	
Geometric Mean	E. coli not density to exceed 126/100 ml
	Fecal coliform density not to exceed 200/100ml
Single Sample	E. coli density not to exceed 235/100 ml
	Fecal coliform density not to exceed 400/100ml

3. **Watershed - Pollutant**
   Calleguas Creek, its Tributaries and Mugu Lagoon - Toxicity, Chlorpyrifos and Diazinon.

   (a) WLA Implementation
   (1) Numerical Limits:
   The WLAs are expressed as numerical limits in-stream for Toxicity, Chlorpyrifos and Diazinon within Calleguas Creek, its Tributaries and Mugu Lagoon's Watershed, established for its MS4 Permittees (Ventura County Watershed Protection District, County of Ventura, and the Cities of Camarillo, Moorpark, Simi Valley, and Thousand Oaks) are the following (see Table 11):

Table 11

Toxicity (TUc) in-stream

Weather	Dry
WLA	1.0

Chlorpyrifos (ug/L) in-stream

Weather	Dry	Dry
WLA	Interim	Final
Chronic (4 day)	0.45	0.014

Diazinon (ug/L) in-stream

Weather	Dry	Dry
WLA	Interim	Final
Acute (1hr.)	1.73	0.10
Chronic (4 day)	0.556	0.10

4. **Watershed - Pollutant**
Calleguas Creek, its Tributaries and Mugu Lagoon[1] - Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCB), and Siltation.

(a) WLA Implementation

(1) Numerical Limits:
The WLAs expressed as numerical limits in-sediment for Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCB) and Siltation within Calleguas Creek, its Tributaries and Mugu Lagoon established for the MS4 Permittees (Ventura County Watershed Protection District, County of Ventura, and the Cities of Camarillo, Moorpark, Simi Valley, and Thousand Oaks) are the following (see Table 12):

[1] Point Mugu Naval Air Weapons Station is not a Phase I MS4 Permittee.

Table 12

OC Pesticides and PCBs (ng/g) in-sediment

Weather	Dry	Dry	Dry	Dry	Dry
WLA	Interim	Interim	Interim	Interim	Interim
	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	17.0	48.0	3.3	3.3	3.4
4,4-DDD	66.0	400.0	290.0	14.0	5.3
4,4-DDE	470.0	1,600.0	950.0	170.0	20.0
4,4-DDT	110.0	690.0	670.0	25.0	2.0
Dieldrin	3.0	5.7	1.1	1.1	3.0
PCBs	3,800.0	7,600.0	25,700.0	25,700.0	3,800.0
Toxaphene	260.0	790.0	230.0	230.0	260.0

OC Pesticides and PCBs (ng/g) in-sediment

Weather	Dry	Dry	Dry	Dry	Dry
WLA	Final	Final	Final	Final	Final
	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0
4,4-DDE	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3
Dieldrin	0.2	0.1	0.2	0.2	0.2
PCBs	120.0	130.0	120.0	120.0	120.0
Toxaphene	0.6	1.0	0.6	0.6	0.6

Siltation (tons/yr.)

WLA	Per year
To Mugu Lagoon	2,496.0

PART 7 - DEFINITIONS

The following are definitions for terms in this Order:

43,560 Square Foot Commercial Development - means any commercial development that creates at least 43,560 square feet of surface area, including parking areas (43,560 sq. ft. equals 1 acre).

Adverse Impact - means a detrimental effect upon water quality or beneficial uses caused by a discharge or loading of a pollutant or pollutants.

Agriculture - means the science, art, and business of cultivating the soil, producing crops, and raising livestock.

Antidegradation Policies - refers to the State (*Statement of Policy with Respect to Maintaining High Quality Water in California*, State Board Resolution No. 68-16), which protects surface and ground waters from degradation, and federal policies, which protects high quality surface waters. In particular, this policy protects waterbodies where existing quality is higher than that necessary for the protection of beneficial uses including the protection of fish and wildlife propagation and recreation on and in the water.

Applicable Standards and Limitations - means all State, interstate, and federal standards and limitations to which a "discharge" or a related activity is subject under the CWA, including effluent limitations, water quality standards, standards of performance, toxic effluent standards or prohibitions, best management practices, and pretreatment standards under § 301, § 302, § 303, § 304, § 306, § 307, § 308, § 403, and § 404 of CWA.

Areas of Special Biological Significance (ASBS) - means all those areas of this state as ASBS, listed specifically within the California Ocean Plan or so designated by the State Board which, among other areas, includes the area from Mugu Lagoon to Latigo Point: Oceanwater within a line originating from Laguna Point at 34° 5' 40" north, 119° 6'30" west, thence southeasterly following the mean high tideline to a point at Latigo Point defined by the intersection of the meanhigh tide line and a line extending due south of Benchmark 24; thence due south to a distance of 1000 feet offshore or to the 100 foot isobath, whichever distance is greater; thence northwesterly following the 100 foot isobath or maintaining a 1,000-foot distance from shore, whichever maintains the greater distance from shore, to a point lying due south of Laguna Point, thence due north to Laguna Point.

Areas Subject to Storm Water Mitigation Requirements - means areas designated as an Area of Special Biological Significance (ASBS) by the State Board, an area designated as a significant natural resource by the California Resources Agency, or an area identified by the discharger as environmentally sensitive for water quality purposes, based on the Regional Water Board Basin Plan and CWA § 303(d) Impaired Water-bodies List for the County of Ventura.

Authorized Discharge - means any discharge that is authorized pursuant to an NPDES permit or meets the conditions set forth in this Order.

Authorization to discharge storm water from storm water treatment BMPs - This Order authorizes discharges from storm water treatment BMPs implemented or installed by the Permittees to reduce the discharge of pollutants in storm water discharges during rain events. All

storm water BMPs shall be maintained at a frequency as specified by the manufacturer or more frequently. All storm water BMPs shall be drained to avoid stagnation or breeding of vectors.

Automotive Repair Shop - means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

Automotive Service Facilities - means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to storm water.

SIC Code	Corresponding NAICS Code
5013	425120, 441310, 425110, & 423120
5014	425120, 425110, 423130, & 441320
5511	441110
5541	447110, & 447190
7532	811121
7533	811112
7534	326212, & 811198
7536	811122
7537	811113
7538	811111
7539	811198, & 811118

Basin Plan - means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments.

Beneficial Uses - means the existing or potential uses of receiving waters in the permit area as designated by the Regional Water Board in the Basin Plan.

Best Management Practices (BMPs) - means methods, measures, or practices designed and selected to reduce or eliminate the discharge of pollutants to surface waters from point and nonpoint source discharges including storm water. BMPs include structural and nonstructural controls, and operation and maintenance procedures, which can be applied before, during, and/or after pollution producing activities.

California Environmental Quality Act (CEQA) - means a California statute that requires state and local agencies to identify significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible (Reference: California Public Resources Code § 21000 et seq.)

Commercial Area(s) - means any geographic area of the Permittees' jurisdiction that is not heavy industrial or residential. A commercial area includes, but is not limited to areas surrounding: commercial activity, hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

Commercial Development - means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

Construction - means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in a land disturbance. Construction also includes structure tear down, routine maintenance to maintain original line and grade if greater than 5 acres total but not necessarily at once, hydraulic capacity, or original purpose of facility; but does not include emergency construction activities required to immediately protect public health and safety; interior remodeling with no outside exposure of construction material or construction waste to storm water.

Construction Activities Storm Water General Permit (CASGP) - means the general NPDES permit adopted by the State Board, which authorizes the discharge of storm water from construction activities under certain conditions.

Control - means to minimize, reduce, eliminate, or prohibit by technological, legal, contractual or other means, the discharge of pollutants from an activity or activities.

Dechlorinated/Debrominated Swimming Pool Discharge - means any swimming pool discharge with a residual chlorine or bromine level of 0.1mg/L; and does not contain any detergents, wastes, algaecides, or cyanuric acid in excess of 50 ppm, or any other additional chemicals including salts from pools commonly referred to as "salt water pools". The term does not include swimming pool filter backwash or swimming pool water containing bacteria.

Development - means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail and any other non-residential projects, including public agency projects; or mass grading for future construction.

Directly Adjacent - means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

Directly Discharging - means outflow from a drainage conveyance system that is composed entirely or predominately of flows from the subject, property, development, subdivision, or industrial facility and not commingled with the flows from adjacent lands.

Discharge - means when used without qualification the "discharge of a pollutant."

Discharging Directly - means outflow from a drainage conveyance system that is composed entirely or predominantly of flows from the subject, property, development, subdivision, or industrial facility, and not commingled with the flows from adjacent lands.

Discharge of a Pollutant - means any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source" or, any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft, which is being used as a means of transportation. The term discharge includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

Disturbed Area - means any area that is altered as a result of land disturbance. Examples include but are not limited to: clearing, grading, grubbing, stockpiling and/or excavation, etc...

Effluent limitation - means any restriction imposed by the Permitting Authority (PA) on quantities, discharge rates, concentrations, and/or mass loadings of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Emergency - means a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. "Emergency" includes such occurrences as fire, flood, earthquake, or other soil or geologic movements, as well as such occurrences as riot, accident, or sabotage (Reference: California Public Resources Code § 21060.3. Emergency).

Environment - means the physical conditions, which exist within the area which, will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved shall be the area in which significant effects would occur either directly or indirectly as a result of the project. The "environment" includes both natural and man-made conditions.

Environmentally Sensitive Area - means an area "in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments" (Reference:

California Public Resources Code § 30107.5). ESAs subject to storm water mitigation requirements are:

1. Regional Water Board's areas listed in the Basin Plan as supporting the "Rare, Threatened, or Endangered Species (RARE)" Beneficial Use.

2. California Coastal Commission's Environmentally Sensitive Habitat Areas as delineated on maps in Local Coastal Plans (LCPs).

Federal Clean Water Act (CWA) - means (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92—500, as amended by Public Law 95—217, Public Law 95—576, Public Law 96—483 and Public Law 77—117, 33 U.S.C. 1251 et seq.

First Storm Event - means the first storm event of the wet season that produces at least 0.25 inches of rain.

Forest Land - means land at least 10 percent stocked with live trees, or land that had this minimum tree stocking in the past and is not currently developed for nonforest use. The minimum area recognized is 1 acre.

Groundwater Dewatering - means the active practice of removing standing water from soil excavations using a pump(s) or other means.

Hillside - means property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 20% or greater and where grading contemplates cut or fill slopes.

Horse Stables - means a property where at least one horse is stabled at least part of the year.

Hydromodification - means the alteration away from a natural state of stream flows or the beds or banks of rivers, streams, or creeks, including ephemeral washes, which results in hydrogeomorphic changes

Illegal Discharge - means any discharge to the municipal separate storm sewer (storm drain system) that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illegal discharge includes all non-storm water discharges not composed entirely of storm water except discharges pursuant to an NPDES permit, discharges that are identified in Part 1, "Discharge Prohibitions" of this order, or discharges authorized by the Regional Water Board Executive Officer.

Illicit Connection - means any engineered conveyance that is connected to the storm drain system without a permit or municipal authorization. It also means any engineered conveyance

through which discharges of pollutants to the separate storm drainage systems, which are not composed entirely of storm water or are not authorized by an NPDES permit.

Illicit Discharge - means any discharge to a municipal separate storm sewer (storm drain system) that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illicit discharge includes all non-storm water discharges not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges that are identified in Part 1, "Discharge Prohibitions" of this order, or authorized by the Regional Water Board Executive Officer.

Illicit Disposal - means any disposal, either intentionally or unintentionally, of material(s) or waste(s) that can pollute storm water.

Industrial/Commercial Facility - means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition.

Industrial Activities Storm Water General Permit (IASGP) - means the general NPDES permit adopted by the State Board, which authorizes the discharge of storm water from certain industrial activities under certain conditions.

Industrial Park - means a land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry.

Inspection - means entry and the conduct of an on-site review of a facility and its operations, at reasonable times, to determine compliance with specific municipal or other legal requirements. The steps involved in performing an inspection, include, but are not limited to:

1. Pre-inspection documentation research..
2. Request for entry.
3. Interview of facility personnel.
4. Facility walk-through.
5. Visual observation of the condition of facility premises.
6. Examination and copying of records as required.
7. Sample collection (if necessary or required).
8. Exit conference (to discuss preliminary evaluation).
9. Report preparation, and if appropriate, recommendations for coming into compliance.

Integrated Pest Management (IPM) - means a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health, and environmental risks.

Large Municipal Separate Storm Sewer System (MS4) - means all MS4s that serve a population greater than 250,000 (1990 Census) as defined in 40 CFR 122.26 (b)(4). The Regional Water Board designated Ventura County as a large MS4 in 1990, based on: (i) the U.S. Census Bureau 1990 population count of 669,016 thousand, and (ii) the interconnectivity of the MS4s in the incorporated and unincorporated areas within the County.

Local SWPPP - means the Local Storm Water Pollution Prevention Plan (LSWPPP) required by the local agency for a project that disturbs one or more acres of land. Shall mean a plan identifying potential pollutant sources from a construction site and describing proposed design, placement and implementation of BMPs, to effectively prevent non-storm water Discharges and reduce Pollutants in Storm Water Discharges to the Storm Drain System, during construction activities. Also referred as a Storm Water Pollution Control Plan (SWPCP).

Maximum Extent Practicable (MEP) - means the standard for implementation of storm water management programs to reduce pollutants in storm water. CWA § 402(p)(3)(B)(iii) requires that municipal permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." Also, see State Board Order WQ 2000-11, page 20 and Browner decision (Defenders of Wildlife v. Browner (1999), 191 F.3d 1159).

Method Detection Limit (MDL) - means the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR 136, Appendix "G" of this Order.

Minimum Level (ML) - means the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed. The ML value represents the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interferences. Assuming that all method-specific analytical steps are followed, the ML value will also represent, after the appropriate application of method-specific factors, the lowest standard in the calibration curve for that specific analytical technique.

Municipal Separate Storm Sewer System (MS4) - means a conveyance or system of conveyances (including roads w/drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains), as defined in 40 CFR 122.26(b)(8):

1. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)...including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under § 208 of the Federal Clean Water Act (CWA) that discharges into waters of the United States.
2. Designed or used for collecting or conveying storm water.
3. Which is not a combined sewer.
4. Which is not part of a Publicly Owned Treatment Works (POTW), as defined in 40 CFR 122.2.

NAICS - means North American Industry Classification System.

National Pollutant Discharge Elimination System (NPDES) - means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA § 307, 402, 318, and 405. The term includes an "approved program."

Natural Drainage Systems - means unlined or unimproved (not engineered) creeks, streams, rivers or similar waterways.

New Development - means land disturbing activities; structural development, including construction or installation of a building or structure, creation and replacement of impervious surfaces; and land subdivision.

Non-Storm Water Discharge - means any discharge to a storm drain that is not composed entirely of storm water.

Nuisance - means anything that meets all of the following requirements: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.; (3) occurs during, or as a result of, the treatment or disposal of wastes.

Nursery - The NAICS will be used to classify nursery operations and determine the type of operations covered under this Order and those covered under the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver).

(a) There are 3 broad NAICS sectors available to classify nurseries:
  (1) 111xxx - Crop Production - Agriculture.
  (2) 424xxx - Merchant Wholesalers, Nondurable Goods.
  (3) 44xxxx - Retail Trade.
    (A) **Nursery (Agricultural Facilities - Crop Production)** - means Nursery and Floriculture Production under NAICS Code 11142x. These operations are subject to the **Conditional Waiver**. This industry comprises establishments primarily engaged in (1) growing nursery and floriculture products (e.g., nursery stock, shrubbery, cut flowers, flower seeds, foliage plants, sod) under cover or in open fields and/or (2) growing short rotation woody trees with a growing and harvesting cycle of 10 years or less for pulp or tree stock (e.g., cut Christmas trees, cottonwoods).
    (B) **Nursery (Commercial Facilities - Merchant Wholesalers, Nondurable Goods, and Retail Trade)** - means industries Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers under NAICS Code 424930; and Nursery, Garden Center, and Farm Supply Stores under NAICS Code 444220. This Order covers these types of operations. The industry in NAICS Code 424930 comprises establishments primarily engaged in the merchant wholesale distribution of flowers, florists' supplies, and/or nursery stock (except plant seeds and plant bulbs). The industry in NAICS Code 444220 comprises establishments primarily engaged in retailing nursery and garden products, such as trees, shubs, plants, seeds, bulbs, floriculture products and sod, which are predominantly grown elsewhere. These establishments may sell a limited amount of a product they grow themselves.

Open Channel – means a storm drainage channel that is not a natural water course

Parking Lot - means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use.

Permit - means an authorization, license, or equivalent control document issued by EPA or an "approve State" to implement the requirements of 40 CFR Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (§ 122.28). Permit does not include any permit, which has not yet been the subject of final agency action, such as a "draft permit" or a "proposed permit."

Permittee(s) - means Co-Permittee(s) and any agency named in this Order as being responsible for permit conditions within its jurisdiction, as defined by Federal Regulation. Permittees to this Order include the Ventura Water Protection District, Ventura County, and the cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley and Thousand Oaks.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.

Point Zero - means in the context of the TMDLs, the point at which water from the storm drain or creek initially mixes with water. Point zero has been selected as the compliance point for the TMDL numeric target because access to these drains is, on the whole, not restricted.

Pollutants - means those "pollutants" defined in CWA § 502(6) (33.U.S.C.§ 1362(6)), and incorporated by reference into California Water Code § 13373.

Potable Drinking Water Supply - means potable drinking water supply releases that are consistent with the *Guidance Manual for Disposal of Chlorinated Water* sponsored by the American Water Works Association (AWWA) Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235 and published by the AWWA Research Foundation and the AWWA in 2001 (ISBN 1-58321-143-8). The discharges shall be controlled and shall not cause erosion downstream nor have a residual chlorine concentration greater than 0.1 mg/L at the entry to the storm drain system or channel or natural system.

Potable Drinking Water Supply Releases - means potable drinking water supply releases shall be consistent with the *Guidance Manual for Disposal of Chlorinated Water* sponsored by the American Water Works Association (AWWA) Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235 and published by the AWWA Research Foundation and the AWWA in 2001 (ISBN 1-58321-143-8). The discharges shall be controlled and shall not cause erosion downstream nor have a residual chlorine concentration greater than 0.1 mg/L at the entry to the storm drain system or channel or natural system.

Potable Water Distribution Systems Releases - means releases of flows from drinking water storage, supply and distribution systems including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing; and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities not involving chemical addition(s). It does not include wastewater discharges from activities that occur at wellheads, such as well construction, well development (i.e., aquifer pumping tests, well purging, etc.), or major well maintenance nor discharge of water from a line that has come into contact with soil as in a trench. Nonetheless, all potable drinking water supply releases shall be consistent with the *Guidance Manual for Disposal of Chlorinated Water* sponsored by the American Water Works Association (AWWA) Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235 and published by the AWWA Research Foundation and the AWWA in 2001 (ISBN 1-58321-143-8). The discharges shall be controlled and shall not cause erosion at

the discharge point or downstream nor have a residual chlorine concentration greater than 0.1 mg/L at the entry to the storm drain system or channel or natural system.

Pre-Developed Condition - means native vegetation and soils that existed at a site prior to first development. The pre-developed condition may be assumed to be an area with the typical vegetation, soil, and storm water runoff characteristics of open space areas in coastal Southern California unless reasonable historic information is provided that the area was atypical.

Priority Pollutants - means those constituents referred to in 40 CFR 401.15 and listed in the U.S. EPA NPDES Application Form 2C, pp. V-3 through V-9.

Project - means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Reference: California Public Resources Code § 21065).

Rare, Threatened, or Endangered Species (RARE) - means a beneficial use for waterbodies in the Los Angeles Region, as designated in the Basin Plan (Table 2-1), that supports habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Redevelopment - means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Administrator - means the Regional Administrator of the Regional Office of the U.S. EPA or the authorized representative of the Regional Administrator.

Report of Waste Discharge (ROWD) - means an application for renewal of the NPDES Permit for Waste Discharge Requirements for Municipal Separate Storm Sewer Discharges Within the Ventura County Watershed Protection District, County of Ventura and the Incorporated Cities Therein.

Restaurant - means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812).

Restoration - means the reestablishment of predisturbance aquatic functions and related physical, chemical and biological characteristics (Reference: National Research Council. 1992. Restoration of Aquatic Ecosystems: Science, Technology and Public Policy. National Academy Press, Washington, D.C.)

Retail Gasoline Outlet (RGO) - means any facility engaged in selling gasoline and lubricating oils- SIC 5541 and NAICS 447110 & 447190.

- RGOs: 447190 Other Gasoline Stations:
  This industry comprises establishments known as gasoline stations (except those with convenience stores) primarily engaged in one of the following: (1) retailing automotive fuels (e.g., diesel fuel, gasohol, gasoline) or (2) retailing these fuels in combination with activities, such as providing repair services; selling automotive oils, replacement parts, and accessories; and/or providing food services.
- RGOs: 447110 Gasoline Stations with Convenience Stores:
  Retailing automotive fuels in combination with a convenience store or food mart.

Runoff - means any runoff including storm water and dry weather flows from a drainage area that reaches a receiving water body or subsurface. It is typically comprised of nuisance flows contaminated with pollutants.

SARA Title III - is the Superfund Amendment and Reauthorization Act of 1986 also known as the Emergency Planning and Community Right-To-Know Act (EPCRA). This act mandated the establishment of State Emergency Response Commissions (SERCs), Tribal Emergency Response Commissions (TERCs), and Local Emergency Planning Committees (LEPCs) who are responsible for preparing for hazardous materials emergencies through planning and training.

Screening - means using proactive methods to identify illicit connections through a continuously narrowing process. The methods may include: performing baseline monitoring of open channels, conducting special investigations using a prioritization approach, analyzing maintenance records for catch basin and storm drain cleaning and operation, and verifying all permitted connections into the storm drains. Special investigation techniques may include: dye testing, visual inspection, smoke testing, flow monitoring, infrared, aerial and thermal photography, and remote control camera operation.

Sidewalk Rinsing - means only sidewalk rinsing using high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed. Any waste generated from the activity must be collected and properly and legally disposed of. It does not mean hosing of any sidewalk nor street with a garden hose with a pressure nozzle.

Significant Redevelopment - means land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

Site - means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

SMC - means Southern California Stormwater Monitoring Coalition. The Stormwater Monitoring Coalition is a collaborative research/monitoring partnership of the Southern California Water Boards, Municipal Storm Water Agencies, and municipalities to develop the methodologies and assessment tools to more effectively understand urban storm water and non-storm water (anthropogenic) impacts to receiving waters and to conduct research/monitoring through Subsequent Research Implementation Agreements. The first original cooperative agreement was entered into on February 8, 2001.

Small Construction - means any soil disturbing activities less than 5 acres.

SoCal B-IBI - means Southern California Benthic Index of Biological Integrity.

Source Control BMP - means any schedules of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

Stream - means a body of flowing water; natural water course containing water at least part of the year. In hydrology, it is generally applied to the water flowing in a natural channel as distinct from a canal (Reference: US Geological Survey).

Strip Mall - means a commercial development that is a shopping center where the stores are arranged in a row, with a sidewalk in front. Strip malls are typically developed as a unit and have large parking lots in front. They face major traffic arterials and tend to be self-contained with few pedestrian connections to surrounding neighborhoods. It is also called a plaza.

Storm Sampling Event - means a rainfall event that produces more than 0.25 inch of precipitation and that, which is separated from the previous storm event by at least 1 week of dry weather, for the purpose of monitoring.

Storm Water - means storm water runoff, snow melt runoff, and surface runoff and drainage, as defined in 40 CFR 122.26(b)(13).

Storm Water Discharge Associated with Industrial Activity - means industrial discharge, as defined in 40 CFR 122.26(b)(14).

Storm Water Pollution Control Plan (SWPCP) - means a plan identifying potential pollutant sources from a construction site and describing proposed design, placement and implementation of BMPs, to effectively prevent non-storm water Discharges and reduce Pollutants in Storm Water Discharges to the Storm Drain System, during construction activities. Also referred to as a Local Storm Water Pollution Prevention Plan (LSWPPP)

Storm Water Quality Management Program - means the Ventura Countywide Storm Water Quality Management Plan, which includes descriptions of programs, collectively developed by the Permittees in accordance with provisions of the NPDES Permit, to comply with applicable federal and state law, as the same is amended from time to time.

Structural BMP - means any structural facility designed and constructed to mitigate the adverse impacts of storm water runoff pollution (e.g. canopy, structural enclosure). The category may include both Treatment Control BMPs and Source Control BMPs.

SWAMP - means the State and Regional Water Boards' Surface Water Ambient Monitoring Program.

Targeted Employees - means management and staff who perform or direct activities that directly or indirectly have an effect of storm water quality. The employees generally are employed in the following areas: department of public works, or engineering, or sanitation, or storm water maintenance, drainage and flood control, transportation, streets and roads, parks and recreation, public landscaping and corporation yards, planning or community development, code enforcement, building and safety, harbor dept, airports, buses and trains, and/or general services and fleet services.

Total Maximum Daily Load (TMDL) - means the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background.

Total Maximum Daily Load (TMDL) Dry Weather- defined in the Bacteria TMDLs as those days with less than 0.1 inch of rainfall and those days occurring within three days after a rain.

Toxicity Identification Evaluation (TIE) - means a set of procedures to identify the specific chemical(s) responsible for toxicity through a process of chemical/physical manipulations of samples followed by toxicity tests. These procedures are performed in 3 phases (Phase I- Toxicity Characterization Procedure, Phase II- Toxicity Identification Procedure, and Phase III- Toxicity Confirmation Procedure) using aquatic organism toxicity tests.

Toxicity Reduction Evaluation (TRE) - means a study conducted in a step-wise process to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity.

Treatment - means the application of engineered systems that use physical, chemical, or biological processes to remove pollutants. Such processes include, but are not limited to, filtration, gravity settling, media absorption, biodegradation, biological uptake, chemical oxidation and UV radiation.

Treatment Control BMP - means any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption or any other physical, biological, or chemical process.

Urbanization - means the process of changing of land use and land patterns from rural characteristics to urban (city-like) characteristics. These changes include (i) the replacement of pervious surfaces with impervious surfaces such as rooftops and buildings, and impervious materials such as asphalt and concrete; and (ii) the conversion of rural land to house new residents, support new businesses, and facilitate vehicular traffic flow.

U.S. EPA Phase I Facilities - means facilities in specified industrial categories that are required to obtain an NPDES permit for storm water discharges, as required by 40 CFR 122.26(c). These categories include:

- Facilities subject to storm water effluent limitation guidelines, new source performance.
- Standards, or toxic pollutant effluent standards (40 CFR N).
- Manufacturing facilities.
- Oil and gas/mining facilities.
- Hazardous waste treatment, storage, or disposal facilities.
- Landfills, land application sites, and open dumps.
- Recycling facilities.
- Steam electric power generating facilities.
- Transportation facilities.
- Sewage of wastewater treatment works.
- Light manufacturing facilities.

Vehicle Maintenance/Material Storage Facilities/Corporation Yards - means any Permittee owned or operated facility or portion thereof that:

1. Conducts industrial activity, operates or stores equipment, materials, and provides services similar to Federal Phase I facilities;
2. Performs fleet vehicle service/maintenance including repair, maintenance, washing, or fueling;
3. Performs maintenance and/or repair of machinery/equipment; or
4. Stores chemicals, raw materials, or waste materials.

Waste Load Allocations (WLAs) - means a portion of a receiving water's Total Maximum Daily Pollutant Load (TMDL) that is allocated to one of its existing or future point sources of pollution (Reference: 40 CFR § 130.2(h)).

Water Quality Objectives - means water quality criteria contained in the Basin Plan, the California Ocean Plan, the National Toxics Rule, the California Toxics Rule, and other state or federally approved surface water quality plans. Such plans are used by the Regional Water Board to regulate all discharges, including storm water discharges.

Water Quality Standards - means the State Water Quality Standards, which are comprised of beneficial uses, water quality objectives and the State's Antidegradation Policy.

Waters of the State - means any surface water or groundwater, including saline waters, within boundaries of the state (Reference: California Water Code § 13050).

Waters of the United States or Waters of the US - means:

a. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
b. All interstate waters, including interstate "wetlands";
c. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    1. Which are or could be used by interstate or foreign travelers for recreational or other purposes;
    2. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    3. Which are used or could be used for industrial purposes by industries in interstate commerce;
d. All impoundment's of waters otherwise defined as waters of the United States under this definition;
e. Tributaries of waters identified in the preceding paragraph (a) through (d) of this definition;
f. The territorial sea; and
g. "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in the preceding paragraph (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.22(m), which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to man-made bodies of water, which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction

remains with U.S. EPA. SOLID WASTE AGENCY OF NORTHERN COOK CTY. V.ARMY CORPS OF ENGINEERS (531 U.S. 159 (2001)) The U.S. Supreme Courts SWANCC Decision upheld the primary rights and responsibilities of States over land and water but limited the water and wetland areas subject to federal regulation under the Clean Water Act.

Watercourse - means any natural or artificial channel for passage of water, including the VCFCD jurisdictional channels included in the List of Channels within the Comprehensive Plan of the VCFCD, as approved by the Board of Supervisors of the VCFCD on October 4, 1993, and any amendments thereto.

Watershed Management - means approach for water resources protection. It is a strategy for integrating and managing resources, both human and fiscal that focuses on regulation of point sources, to a more regional approach that acknowledges environmental impacts from other activities.

Watershed Management Areas (WMA) - means the geographically-defined watershed areas where the Regional Water Board will implement the watershed approach. These generally involve a single large watershed within which exists smaller subwatersheds but in some cases may be an area that does not meet the strict hydrologic definition of a watershed e.g., several small Ventura coastal waterbodies in the region are grouped together into one WMA.

Wet Season - means the calendar period beginning October 1 through April 15.

Whole Effluent Toxicity - means the aggregate toxic effect of an effluent measured directly by a toxicity test.

PART 8 - STANDARD PROVISIONS

A. General Requirements

1. The Permittee shall comply with all provisions and requirements of this Order.

2. Should the Permittee discover that it failed to submit any relevant facts or that it submitted incorrect information in a report it shall promptly submit the missing or correct information.

3. The Permittee shall report all instances of non-compliance not otherwise reported at the time monitoring reports are submitted.

4. This Order includes Attachment "F", the Reporting Program, which is a part of this Order and must be complied with.

B. Regional Water Board Review

1. The Regional Water Board may review any formal determinate or approval made by the Regional Water Board Executive Officer pursuant to the provisions of this Order.

   (a) Permittee(s) or a member of the public may request such review upon petition within 30 day of the effective date of the notification of such decision to the Permittee(s) and interested parties on file at the Regional Water Board.

C. Public Review

1. All documents submitted to the Regional Water Board in compliance with the terms and conditions of this Order shall be made available to members of the public pursuant to the Freedom of Information Act (5 U.S.C. § 552), as amended, and the Public Records Act (California Government Code § 6250 et seq.).

2. All documents submitted to the Regional Water Board Executive Officer for approval shall be made available to the public for a 30-day period to allow for public comment.

D. Duty to Comply [40 CFR 122.41(a)]

1. Each Permittee must comply with all of the terms, requirements, and conditions of this Order. Any violation of this order constitutes a violation of the Clean Water Act, its regulations and the California Water Code, and is grounds for enforcement action, Order termination, Order revocation and reissuance, denial of an application for reissuance, or a combination thereof [40 CFR 122.41(a), CAL. WATER CODE § 13261, 13263, 13265, 13268, 13300, 13301, 13304, 13340, 13350].

2. A copy of these waste discharge specifications shall be maintained by each Permittee so as to be available during normal business hours to Permittee employees and members of the public.

3. Any discharge of wastes at any point(s) other than specifically described in this Order is prohibited, and constitutes a violation of the Order.

E. Duty to Mitigate [40 CFR 122.41 (d)]

1. Each Permittee shall take all reasonable steps to minimize or prevent any discharge that has a reasonable likelihood of adversely affecting human health or the environment.

F. Inspection and Entry; Investigations; Responsibilities [40 CFR 122.41(i), Cal. Water Code § 13225 and § 13267]

1. The Regional Water Board, U.S. EPA, and other authorized representatives shall be allowed:

   (a) Entry upon premises where a regulated facility is located or conducted, or where records are kept under conditions of this Order;

   (b) Access to copy any records, at reasonable times that are kept under the conditions of this Order;

   (c) To inspect at reasonable times any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order;

   (d) To photograph, sample, and monitor at reasonable times for the purpose of assuring compliance with this Order, or as otherwise authorized by the CWA and the CAL. WATER CODE;

   (e) To review any water quality control plan or waste discharge requirements, or in connection with any action relating to any plan or requirement to investigate the quality of any waters of the state within its region; and,

   (f) To require as necessary any state or local agency to investigate and report on any technical factors involved in water quality control or to obtain and submit analyses of water.

G. Proper Operation and Maintenance [40 CFR 122.41 (e), Cal. Water Code § 13263(f)]

1. The Permittees shall at all times properly operate and maintain all facilities and systems of treatment (and related appurtenances) that are installed or used by the Permittees to achieve compliance with this Order. Proper operation and maintenance includes:
   (a) adequate laboratory controls; and
   (b) appropriate quality assurance procedures.

2. This provision requires the operation of backup or auxiliary facilities or similar system that are installed by a Permittee only when necessary to achieve compliance with the conditions of this Order.

H. Signatory Requirements [40 CFR 122.41(k) & 122.22]

1. Except as otherwise provided in this Order, all applications, reports, or information submitted to the Regional Water Board shall be signed by the Director of Public Works, City Engineer, or authorized designee and certified as set forth in 40 CFR 122.22.

I. Reopener and Modification [40 CFR 122.41(f) & 122.62]

1. This Order may only be modified, revoked, or reissued, prior to the expiration date, by the Regional Water Board, in accordance with the procedural requirements of the CAL. WATER CODE and CCR Title 23 for the issuance of waste discharge requirements, 40 CFR 122.62, and upon prior notice and hearing, to:
   (a) Address changed conditions identified in the required reports or other sources deemed significant by the Regional Water Board;
   (b) Incorporate applicable requirements or statewide water quality control plans adopted by the State Board or amendments to the Basin Plan, including TMDLs;
   (c) Comply with any applicable requirements, guidelines, and/or regulations issued or approved pursuant to CWA § 402(p); and/or,
   (d) Consider any other federal, or state laws or regulations that became effective after adoption of this Order.

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
   (a) Violation of any term or condition contained in this Order;
   (b) Obtaining this Order by misrepresentation, or failure to disclose all relevant facts; or,
   (c) A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

3. The filing of a request by the Principal Permittee or Permittees for a modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

4. This Order may be modified to make corrections or allowances for changes in the permitted activity listed in this section, following the procedures at 40 CFR 122.63, if processed as a minor modification. Minor modifications may only:
   (a) Correct typographical errors; or
   (b) Require more frequent monitoring or reporting by the Permittee.

J. Severability

1. The provisions of this Order are severable; and if any provision of this Order or the application of any provision of this Order to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Order shall not be affected.

K. Duty to Provide Information [40 CFR 122.41(h)]

1. The Permittees shall furnish, within a reasonable time, any information the Regional Water Board or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order.

2. The Permittees shall also furnish to the Regional Water Board, upon request, copies of records required to be kept by this Order.

L. Twenty-Four Hour Reporting [40 CFR 122.41(l)(6)][1]

1. The Permittees shall report to the Regional Water Board any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time any Permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

2. The Regional Water Board may waive the required written report on a case-by-case basis.

M. Bypass [40 CFR 122.41(m)][2]

1. Bypass (the intentional diversion of waste streams from any portion of a treatment facility) is prohibited. The Regional Water Board may take enforcement action against Permittees for bypass unless:

   (a) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage. (Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected

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[1] This provision applies to incidents where effluent limitations (numerical or narrative) as provided in this Order or in the Ventura County SMP are exceeded, and which endanger public health or the environment.

[1]This provision applies to the operation and maintenance of storm water controls and BMPs as provided in this Order or in the Ventura County SMP.
[2]This provision applies to incidents where effluent limitations (numerical or narrative) as provided in this Order or in the Ventura County SMP are exceeded, and which endanger public health or the environment.

to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.);

(b) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment down time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that could occur during normal periods of equipment downtime or preventive maintenance;

(c) The Permittee submitted a notice at least ten days in advance of the need for a bypass to the Regional Water Board; or,

(d) Permittees may allow a bypass to occur that does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable. The Permittee shall submit notice of an unanticipated bypass as required.

N. Upset [40 CFR 122.41(n)][2]

1. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. A Permittee that wishes to establish the affirmative defense of an upset in an action brought for non compliance shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
   (a) An upset occurred and that the Permittee can identify the cause(s) of the upset;
   (b) The permitted facility was being properly operated by the time of the upset;
   (c) The Permittee submitted notice of the upset as required; and,
   (d) The Permittee complied with any remedial measures required.

3. No determination made before an action for noncompliance, such as during administrative review of claims that non-compliance was caused by an upset, is final administrative action subject to judicial review.

4. In any enforcement proceeding, the Permittee seeking to establish the occurrence of an upset has the burden of proof.

O. Property Rights [40 CFR 122.41(g)]

1. This Order does not convey any property rights of any sort, or any exclusive privilege.

P. Enforcement

1. Violation of any of the provisions of the NPDES permit or any of the provisions of this Order may subject the violator to any of the penalties described herein, or any combination thereof, at the discretion of the prosecuting authority; except that only one kind of penalties may be applied for each kind of violation. The CWA provides the following:

   (a) Criminal Penalties for:

   (1) Negligent Violations:
   The CWA provides that any person who negligently violates permit conditions implementing CWA § 301, 302, 306, 307, 308, 318, or 405 is subject to a fine of not less than $2,500 nor more than $25,000 per day for each violation, or by imprisonment for not more than 1 year, or both.

   (2) Knowing Violations:
   The CWA provides that any person who knowingly violates permit conditions implementing CWA § 301, 302, 306, 307, 308, 318, or 405 is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

   (3) Knowing Endangerment:
   The CWA provides that any person who knowingly violates permit conditions implementing CWA § 301, 302, 307, 308, 318, or 405 and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

   (4) False Statement:
   The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of

violation, or by imprisonment of not more than four years, or by both. (See CWA § 309(c)(4))

(b) Civil Penalties
The CWA provides that any person who violates a permit condition implementing CWA § 301, 302, 306, 307, 308, 318, or 405 is subject to a civil penalty not to exceed $27,500 per day for each violation.

Q. Need to Halt or Reduce Activity not a Defense [40 CFR 122.41(c)]

1. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order.

R. Rescission of Board Order

1. Regional Water Board Order No. 00-108 is hereby rescinded.

S. Board Order Expiration Date

1. This Order expires on **Xx xx, 200x**. The Permittees must submit a Report of Waste Discharge (ROWD) and a proposed Storm Water Quality Management Program in accordance with CCR Title 23 as application for reissuance of waste discharge requirements no later than 180 days in advance of such date (**Xx xx, 200x**).

T. MS4 Annual Reporting Program [40 CFR 122.42(c)]

1. The Annual Program Reporting shall include the following information:

(a) *Municipal separate storm sewer systems.*
The operator of a large or medium municipal separate storm sewer system or a municipal separate storm sewer that has been designated by the Director under 40 CFR 122.26(a)(1)(v) of this part must submit an annual report by the anniversary of the date of the issuance of the permit for such system. The report shall include:
(1) The status of implementing the components of the storm water management program that are established as permit conditions;
(2) Proposed changes to the storm water management programs that are established as permit condition. Such proposed changes shall be consistent with 40 CFR 122.26(d)(2)(iii) of this part;
(3) Revisions, if necessary, to the assessment of controls and the fiscal analysis reported in the permit application under 40 CFR 122.26(d)(2)(iv) and (d)(2)(v) of this part;

(4) A summary of data, including monitoring data that is accumulated throughout the reporting year;
(5) Annual expenditures and budget for year following each annual report;
(6) A summary describing the number and nature of enforcement actions, inspections, and public education programs; and
(7) Identification of water quality improvements or degradation.

I, Jonathan S. Bishop, Regional Water Board Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on Xx xx, 200x.

Jonathan S. Bishop
Executive Office

Case Studies

Author/Agency/Organization	Title	Date	URL
City of Chicago	City Launches Green Roof Grants Program	11/02/05	http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?BV_SessionID=@@@@0664391742.1150324275@@@@&BV_EngineID=cccdaddidejikmgcefeceilcffhdfgm.0&contentOID=536932287&contenTypeName=COC_EDITORIAL&topChannelName=HomePage
Architecture Week	A Better Suburbia	01/05	http://www.architectureweek.com/2005/0119/building_1-1.html
Rocky Mountain Institute	Village Homes, Davis, California		http://www.rmi.org/sitepages/pid209.php
EPA	Stormwater Management at the EPA Headquarters Office Complex		http://www.epa.gov/owow/nps/lid/stormwater_hq/
Clausen, J. et al.	Jordan Cove Urban Watershed Section 319 National Monitoring Program Project	02/06	http://www5.bae.ncsu.edu/programs/extension/wqg/issues/notes120.pdf
Connecticut Department of Environmental Protection	After 10 Years – Officials Celebrate Results of Important Water Monitoring Project	10/19/05	http://dep.state.ct.us/whatshap/Press/2005/101905.htm
Connecticut Department of Environmental Protection	Jordan Cove Urban Monitoring Project	10/02	http://dep.state.ct.us/wtr/nps/succstor/jordncve.pdf
National Oceanographic and Atmospheric Administration / Coastal Services	Storm Water Management: Putting Real Life to the Test in Connecticut	01-02/04	http://www.csc.noaa.gov/magazine/2004/01/conn.html
Maryland Department of the Environment	Controlling Stormwater: Some Lessons From The Maryland Experience	10/90	
EPA	Bioretention Applications: Inglewood Demonstration Project, Largo, Maryland and Florida Aquarium, Tampa, Florida	10/00	www.epa.gov/owow/nps/bioretention.pdf
PILGRIM Education Fund	Waterways at Risk: How Low-Impact Development Can Reduce Runoff Pollution in Michigan	2005	
STORMWATER, The Journal for Surface Water Quality Professionals	Beyond Flood Control: From green roofs to pervious pavement to underground treatment, Milwaukee experiments with newer water-quality and flood control measures	03-04/04	http://www.forester.net/sw_0403_beyond.html
Blue: Land, Water, Infrastructure	An Assessment of Outer Banks Coastal Environmental Conditions, Existing Stormwater Management Strategies, and the Local and State Regulatory Context to Help Local Communities Effectively Implement Low Impact Development	06/06	
Abrams, Glen J.	New Thinking in an Old City: Philadelphia's Movement Toward Low-Impact Development	02/04	http://www5.bae.ncsu.edu/programs/extension/wqg/issues/notes112.pdf
EPA	Vegetated Roof Cover: Philadelphia, Pennsylvania	10/00	www.epa.gov/owow/nps/roofcover.pdf
City of Portland Bureau of Environmental Services	Downspout Disconnection Program Hits the Billion Gallon Mark	06/14/05	http://www.portlandonline.com/bes/index.cfm?a=82190&c=37621#disco
Cheng, M., *et al*.	Hydrological Responses from Low Impact Development Comparing with Conventional Development	11/00	http://www.scdhec.net/water/lid/pdf/somerset.pdf
Levitt, J., and Bergan, L.	Using Nature's Plumbing to Restore Aquatic Ecosystems: The City of Seattle's Natural Drainage System	02/05	http://www5.bae.ncsu.edu/programs/extension/wqg/issues/notes116.pdf
Horner, R., *et al*.	Hydroiogic Monitoring of the Seattle Ultra-Urban Stormwater Management Projects: Summaray of the 2000-2003 Water Years	10/04	
Seattle Public Utilities	Natural Drainage Projects		http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/Natural_Drainage_Systems/Natural_Drainage_Overview/index.asp
Dorava, J., Vierbicher Associates, Inc.	Enhancing Storm Water Infiltration to Reduce Water Temperature Downstream		http://www.epa.gov/owow/nps/natlstormwater03/08Dorava.pdf
The City of Vancouver	Crown Street: Vancouver's First Environmentally Sustainable Street	03/30/05	http://www.tac-atc.ca/english/pdf/conf2005/s5/kauffman.pdf
Natural Resources Defense Council	Out of the Gutter: Reducing Polluted Runoff in the District of Columbia	07/02	http://www.nrdc.org/water/pollution/gutter/gutter.pdf

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Benefits of LID	Anacostia River Business Coalition Update	Rain Gardens: Beautifying your Business and Helping the Anacostia	Spring 2003	http://www.potomacriver.org/arbc/newsletters/newsletterspring03.pdf
Benefits of LID	Blankenship, K.	It's a Hard Road Ahead for Meeting New Sprawl Goal; States Will Try to Control Growth of Impervious	2004	http://www.bayjournal.com/article.cfm?article=66
Benefits of LID	Center for Watershed Protection	Stormwater Management 101: Past, Present, and Future	04/06	http://www.rockvillemd.gov/government/commissions/ec/documents/Stormwater_101_CWP.pdf
Benefits of LID	Center for Watershed Protection	Redevelopment Roundtable Consensus Agreement	10/01	http://www.cwp.org/smartsites.pdf
Benefits of LID	Center for Watershed Protection (Stormwater Manager's Resource Center)	Model Post-Construction Stormwater Runoff Control Ordinance		http://www.stormwatercenter.net/Model%20Ordinances/Post%20Construction%20Stormwater%20Management/Final%20Model%20Stormwater%20Control.htm
Benefits of LID	Conservation Research Institute	Changing Cost Perceptions: An Analysis of Conservation Development	02/05	http://www.nipc.org/environment/sustainable/conservationdesign/cost_analysis/Cost%20Analysis%20Report.pdf
Benefits of LID	Guillette, A.	Low Impact Development Technologies	05/18/06	http://www.wbdg.org/design/lidtech.php
Benefits of LID	Guillette, A.	Achieving Sustainable Site Design Through Low Impact Development Practices	05/18/06	http://www.wbdg.org/design/lidsitedesign.php
Benefits of LID	Jones, D.	Low Impact Development	11/98	http://www.ncsu.edu/wrri/conference/2006ac/pdf/Jones_LID-1.pdf
Benefits of LID	Local Government Commission	The Ahwahnee Principles for Resource Efficient Land Use	2005	http://www.lgc.org/ahwahnee/h2o_principles_print.html
Benefits of LID	Local Government Commission	Urban Stormwater Management		http://www.lgc.org/freepub/PDF/water/water_stormwat
Benefits of LID	Mallin, M.	Wading in Waste	06/06	http://www.sciam.com/article.cfm?chanID=sa006&colID=1&articleID=0003B364-B58B-146C-B2F983414B7F0000
Benefits of LID	Metro Nature in Neighborhoods (Portland, Oregon)	Green from the Ground Up	10/06	http://www.metro-region.org/library_docs/nature/06376_building_design.pdf
Benefits of LID	Natural Resources Defense Council	Stormwater Strategies: Community Responses to Runoff Pollution	5/99	http://www.nrdc.org/water/pollution/storm/stoinx.asp
Benefits of LID	Natural Resources Defense Council	Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows	06/06	http://www.nrdc.org/water/pollution/rooftops/rooftops.pdf
Benefits of LID	NEMO	Low Impact Development (LID): A sensible approach to land development and stormwater management		http://www.coastal.ca.gov/nps/lid-factsheet.pdf
Benefits of LID	Puget Sound Action Team	Low Impact Development Local Regulation Assistance Project 2005	2005	http://www.psat.wa.gov/Programs/LID/assistance/LID_assistance.htm
Benefits of LID	Puget Sound Action Team	Natural Approaches to Stormwater Management: Low Impact Development in Puget Sound	03/03	http://www.psat.wa.gov/Publications/LID_studies/lid_natural_approaches.pdf
Benefits of LID	The Low Impact Development Center, Inc.	Low Impact Development for Big Box Retailers	11/05	http://lowimpactdevelopment.org/bigbox/lid%20articles/bigbox_final_doc.pdf
Benefits of LID	The South Whidbey Record	Langley Proposes New Rules for Homes	10/22/05	http://www.psat.wa.gov/Programs/LID/south_whidbey_record_102205.pdf
Benefits of LID	Watershed Protection Techniques	Housing Density and Urban Land Use as Indicators of Stream Quality	01/00	

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California-Specific Reports	American Planning Association	California Smart Growth Advocate Receives National Planning Award	01/07/05	http://www.planning.org/newsreleases/2005/ftp0107053.htm
California-Specific Reports	Chralowicz, D.,*et al.*	Infiltration of Urban Stormwater Runoff to Recharge Groundwater Used for Drinking Water: A Study of the San Fernando Valley, California	6/01	www.bren.ucsb.edu/research/FinalDocs/2001/Stormwater-Final.pdf
California-Specific Reports	California State Water Resources Control Board	Low Impact Development – Sustainable Water Management	01/20/05	http://www.waterboards.ca.gov/lid/index.html
California-Specific Reports	Devinny, J.S.,*et al.*	Alternative Approaches to Stormwater Quality Control	06/04	http://www.usc.edu/dept/geography/ESPE/documents/publication_stormwater.pdf
California-Specific Reports	International Building Council	Building Valuation Data	2003	http://www.nfic.org/exes_pdfs_downloads/Downloads/ICBO%20Bldg%20Valuation%20Table.pdf
California-Specific Reports	Metropolitan Water District of Southern California	2007 Rates and Charges Fact Sheets	2005	http://www.mwdh2o.com/mwdh2o/pages/finance/finance_03.html
California-Specific Reports	Metropolitan Water District of Southern California	Water to be Limited in South Ventura County While Regional Treatment Plant, Large Pipeline Are Shut Down	01/11/2007	http://www.mwdh2o.com/mwdh2o/pages/news/press_releases/2007-01/shutdown.htm
California-Specific Reports	Polakovic, G. (L.A. Times)	Water Quest Shifts Course	06/11/06	http://www.topix.net/content/trb/027155642416035709541424845553428482039 9
California-Specific Reports	Robertus, J., Executive Officer San Diego RWQCB	Stormwater Treatment Options	01/05	
California-Specific Reports	Robertus, J., Executive Officer San Diego RWQCB	Water Quality Regulatory Dynamics of Development	01/06	
California-Specific Reports	RWQCB, Los Angeles Region	The Role of Municipal Operators in Controlling the Discharge of Pollutants in Storm Water Runoff from Industrial/Commercial Facilities	11/01	http://www.swrcb.ca.gov/rwqcb4/html/programs/stormwater/lams4_tentative/ACaseForInspections.pdf
California-Specific Reports	Ventura County Waterworks District No. 17	Annual Water Quality Report	2004	http://publicworks.countyofventura.org/wre/wss/wss_pdf/CA_Ventura17_web%20JB.pdf
Case Study: Chicago, IL	City of Chicago	City Launches Green Roof Grants Program	11/02/05	http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?BV_SessionID=@@@@0664391742.1150324275@@@@&BV_EngineID=cccdaddidejikmgcefecelldffhdfgm.0&contentOID=536932287&contenTypeName=COC_EDITORIAL&topChannelName=HomePage
Case Study: Davis, CA	Architecture Week	A Better Suburbia	01/05	http://www.architectureweek.com/2005/0119/building_1-1.html
Case Study: Davis, CA	Rocky Mountain Institute	Village Homes, Davis, California		http://www.rmi.org/sitepages/pid209.php
Case Study: EPA Headquarters, Washington DC	EPA	Stormwater Management at the EPA Headquarters Office Complex		http://www.epa.gov/owow/nps/lid/stormwater_hq/
Case Study: Jordan Cove, CT	Clausen, J. et al.	Jordan Cove Urban Watershed Section 319 National Monitoring Program Project	02/06	http://www5.bae.ncsu.edu/programs/extension/wqg/issues/notes120.pdf
Case Study: Jordan Cove, CT	Connecticut Department of Environmental Protection	After 10 Years – Officials Celebrate Results of Important Water Monitoring Project	10/19/05	http://dep.state.ct.us/whatshap/Press/2005/101905.htm
Case Study: Jordan Cove, CT	Connecticut Department of Environmental Protection	Jordan Cove Urban Monitoring Project	10/02	http://dep.state.ct.us/wtr/nps/succstor/jordncve.pdf

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Case Study: Jordan Cove, CT	National Oceanographic and Atmospheric Administration / Coastal Services	Storm Water Management: Putting Real Life to the Test in Connecticut	01-02/04	http://www.csc.noaa.gov/magazine/2004/01/conn.html
Case Study: Maryland	Maryland Department of the Environment	Controlling Stormwater: Some Lessons From The Maryland Experience	10/90	
Case Study: Maryland and Florida	EPA	Bioretention Applications: Inglewood Demonstration Project, Largo, Maryland and Florida Aquarium, Tampa, Florida	10/00	www.epa.gov/owow/nps/bioretention.pdf
Case Study: Michigan	PILGRIM Education Fund	Waterways at Risk: How Low-Impact Development Can Reduce Runoff Pollution in Michigan	2005	
Case Study: Milwaukee, WI	STORMWATER, The Journal for Surface Water Quality Professionals	Beyond Flood Control: From green roofs to pervious pavement to underground treatment, Milwaukee experiments with newer water-quality and flood control measures	03-04/04	http://www.forester.net/sw_0403_beyond.html
Case Study: Outer Banks, North Carolina	Blue: Land, Water, Infrastructure	An Assessment of Outer Banks Coastal Environmental Conditions, Existing Stormwater Management Strategies, and the Local and State Regulatory Context to Help Local Communities Effectively Implement Low Impact Development	06/06	
Case Study: Philadelphia, PA	Abrams, Glen J.	New Thinking in an Old City: Philadelphia's Movement Toward Low-Impact Development	02/04	http://www5.bae.ncsu.edu/programs/extension/wqg/issues/notes112.pdf
Case Study: Philadelphia, PA	EPA	Vegetated Roof Cover: Philadelphia, Pennsylvania	10/00	www.epa.gov/owow/nps/roofcover.pdf
Case Study: Portland, OR	City of Portland Bureau of Environmental Services	Downspout Disconnection Program Hits the Billion Gallon Mark	06/14/05	http://www.portlandonline.com/bes/index.cfm?a=82190&c=37621#disco
Case Study: Prince George's County, MD	Cheng, M., *et al.*	Hydrological Responses from Low Impact Development Comparing with Conventional Development	11/00	http://www.scdhec.net/water/lid/pdf/somerset.pdf
Case Study: Seattle, WA	Levitt, J., and Bergan, L.	Using Nature's Plumbing to Restore Aquatic Ecosystems: The City of Seattle's Natural Drainage System	02/05	http://www5.bae.ncsu.edu/programs/extension/wqg/issues/notes116.pdf
Case Study: Seattle, WA	Horner, R., *et al.*	Hydrologic Monitoring of the Seattle Ultra-Urban Stormwater Management Projects: Summaray of the 2000-2003 Water Years	10/04	
Case Study: Seattle, WA	Seattle Public Utilities	Natural Drainage Projects		http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/Natural_Drainage_Systems/Natural_Drainage_Overview/index.asp
Case Study: Sun Prairie, WI	Dorava, J., Vierbicher Associates, Inc.	Enhancing Storm Water Infiltration to Reduce Water Temperature Downstream		http://www.epa.gov/owow/nps/natlstormwater03/08Dorava.pdf
Case Study: Vancouver, WA	The City of Vancouver	Crown Street: Vancouver's First Environmentally Sustainable Street	03/30/05	http://www.tac-atc.ca/english/pdf/conf2005/s5/kauffman.pdf
Case Study: Washington, DC	Natural Resources Defense Council	Out of the Gutter: Reducing Polluted Runoff in the District of Columbia	07/02	http://www.nrdc.org/water/pollution/gutter/gutter.pdf
Government Sources	Cantú, Celeste, Executive Director, California Water Boards	Building Livable, Sustainable Communities: Water Quality and Supply is Linked to Growth	04/05/06	http://www.swrcb.ca.gov/agendas/2006/april/0405_01pres.pdf
Government Sources	Department of Defense	Unified Facilities Criteria: Low Impact Development	10/25/04	http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_10.pdf

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Government Sources	EPA	Potential Groundwater Contamination from Intentional and Nonintentional Stormwater Infiltration	05/94	http://www.p2pays.org/ref/07/06744.pdf
Government Sources	EPA	Preliminary Data Summary of Urban Storm Water Best Management Practices	08/99	http://www.epa.gov/OST/stormwater/
Government Sources	EPA	Field Evaluation of Permeable Pavements for Stormwater Management	10/00	http://www.epa.gov/owow/nps/pavements.pdf
Government Sources	EPA	Low Impact Development (LID): A Literature Review	10/00	http://www.epa.gov/nps/lid.pdf
Government Sources	EPA	Protecting Water Resources With Higher-Density Development	01/06	http://www.epa.gov/dced/pdf/protect_water_higher_density.pdf
Government Sources	EPA	Nonpoint Source News-Notes; Low-Impact Development Pays Off	05/05	http://www.epa.gov/owow/info/NewsNotes/issue75/75issue.pdf
Government Sources	EPA	Nonpoint Source News-Notes; Many Paths Lead to Adoption of Low Impact Development	10/05	http://www.epa.gov/owow/info/NewsNotes/issue76/76issue.pdf
Government Sources	EPA	Using Smart Growth Techniques as Stormwater Best Management Practices	12/05	http://www.epa.gov/dced/pdf/sg_stormwater_BMP.pdf
Government Sources	EPA	Low Impact Development (LID) and Other Green Design Strategies		http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=124
ırnment Sources	EPA	US EPA Storm Water Program's Webcast Series: Post Construction 101		http://www.epa.gov/npdes/outreach_files/webcast/ma /files/lobby.html
Government Sources	Los Angeles Bureau of Sanitation, Department of Public Works	Reference Guide for Stormwater Best Management Practices	07/00	http://www.lacity.org/SAN/wpd/WPD/download/pdfs/publications/bmp_refguide.pdf
Government Sources	Maryland Department of the Environment	Maryland Stormwater Design Manual, Volumes I & II	10/00	http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.asp
Government Sources	Maryland, Prince George's County Department of Environmental Resources	Low-Impact Development Design Strategies: An Integrated Design Approach	06/99	http://www.epa.gov/owow/nps/lidnatl.pdf
Government Sources	Maryland, Prince George's County Department of Environmental Resources	Low-Impact Development Design: A New Paradigm for Stormwater Management Mimicking and Restoring the Natural Hydrologic Regime An Alternative Stormwater Management Technology		http://www.epa.gov/ORD/WebPubs/nctuw/Coffman.pdf
Government Sources	Metropolitan Area Planning Council (Boston, MA)	Massachusetts Low Impact Development Toolkit		http://www.mapc.org/LID.html
Government Sources	Outer Banks Hydrology Committee (North Carolina)	Report of LID Findings	11/05	
Industry Sources	American Society of Civil Engineers	Stormwater Management	2004	www.asce.org/pressroom/news/policy_details.cfm?hdlid=160
Industry Sources	California Builder: the Magazine of the California Building Industry Association (Frith, J.)	Building Green: It's Good for the Environment - and the Bottom Line	03-04/02	www.californiabuildermagazine.com/internal.asp?pid=32&spid
stry Sources	California Builder: the Magazine of the California Building Industry Association (Grillo, T.)	Concrete Evidence: Age-Old Material Continues to Reinvent Itself		http://www.californiabuildermagazine.com/internal.asp? 94

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Industry Sources	Environmental Water Resources Institute of the American Society of Civil Engineers	International Stormwater Best Management Practices Database		www.bmpdatabase.org
Industry Sources	National Association of Home Builders	Green Home Building Guidelines	2006	http://www.nahbrc.org/greenguidelines/complete_guidelines.pdf
Industry Sources	National Association of Home Builders Research Center	Builder's Guide to Low Impact Development	2003	http://www.toolbase.org/PDF/DesignGuides/Builder_LID.pdf
Industry Sources	National Association of Home Builders Research Center	Guides to Low Impact Development	2003	http://www.toolbase.org/Design-Construction-Guides/Land-Use/low-impact-development-guides
Industry Sources	National Association of Home Builders Research Center	Low Impact Development (LID) Practices for Storm Water Management		http://www.toolbase.org/Techinventory/TechDetails.aspx?ContentDetailID=909&BucketID=6&CategoryID=11
Industry Sources	National Association of Home Builders Research Center	Municipal Guide to Low Impact Development	2003	http://www.toolbase.org/PDF/DesignGuides/Municipal_LID.pdf
Industry Sources	National Association of Home Builders, Partnership for Advancing Technology in Housing (PATH)	The Practice of Low Impact Development	07/03	http://www.huduser.org/Publications/PDF/practLowImpctDevel.pdf
Industry Sources	National Association of Home Builders, Partnership for Advancing Technology in Housing (PATH)	Permeable Pavement		http://www.toolbase.org/techinv/techDetails.aspx?technologyID=98
ry Sources	National Association of Home Builders, Partnership for Advancing Technology in Housing (PATH) ToolBase Services	Environmentally Green... Economically Green: Tools for a Green Land Development Program	2001	http://www.toolbase.org/PDF/DesignGuides/Enviro_Econ_Green.pdf
Industry Sources	National Association of Home Builders, Partnership for Advancing Technology in Housing (PATH) ToolBase Services	Low Impact Development Offers Some Solutions for Groundwater Issues	2001	
Industry Sources	Urban Land Institute, American Society of Civil Engineers, & National Association of Home Builders	Residential Storm Water Management	1975	http://www.toolbase.org/PDF/DesignGuides/storm_water_management.pdf
State and Municipal Storm Water Regulations	California (City of Santa Monica)	Santa Monica Municipal Code, Chapter 7.10: Urban Runoff Pollution	11/28/00	http://www.qcode.us/codes/santamonica/index.php
State and Municipal Storm Water Regulations	California (RWQCB, Los Angeles Region)	Order No. 01-182 (Dec. 13, 2001) (NPDES Permit No. CAS004001)	12/13/01	http://63.199.216.5/webdata/data/docs/6948_01-182_WDR.pdf
State and Municipal Storm Water Regulations	California (RWQCB, San Francisco Bay Region)	Contra Costa Countrywide NPDES Municipal Stormwater Permit Amendment	02/19/03	http://www.swrcb.ca.gov/rwqcb2/Agenda/02-19-03/02-19-03-13finalorder.doc
State and Municipal Storm Water Regulations	Florida (St. Johns River Waste Management District)	Environmental Resource Permits: Regulations of Stormwater Management Systems	10/03/95	
State and Municipal Storm Water Regulations	Illinois	General NPDES Permit For Discharges from Small Municipal Separate Storm Sewer Systems	12/20/02	http://www.epa.state.il.us/water/permits/storm-water/general-ms4-permit.pdf
and cipal Storm ...ater Regulations	Maryland	Maryland's Stormwater Management Program	11/88	

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State and Municipal Storm Water Regulations	Maryland	Explanation of Maryland's Stormwater Management Program	05/31/00	
State and Municipal Storm Water Regulations	Maryland	Maryland Model Stormwater Management Ordinance	07/00	http://www.mde.state.md.us/assets/document/sedimentstormwater/model_ordinance.pdf
State and Municipal Storm Water Regulations	Maryland	Stormwater Management Code, Title 26, Subtitle 17 Water Management, Chapter 02 Stormwater Management	10/00	http://www.dsd.state.md.us/comar/26/26.17.02.05.htm
State and Municipal Storm Water Regulations	Maryland (City of Chestertown)	Stormwater Management Ordinance	06/25/84	http://www.chestertown.com/gov/codehtml/0767-142.htm
State and Municipal Storm Water Regulations	Michigan (Grand Traverse County)	Soil Erosion, Sedimentation, and Stormwater Runoff Control Ordinance	2003	http://www.co.grand-traverse.mi.us/Assets/Departments/Drain+Commissioner/Departments-Drain+Commissioner-Soil+Erosion+Ordinance+9-9-03.pdf
State and Municipal Storm Water Regulations	Missouri	Missouri State Operating Permit	03/10/03	http://www.dnr.mo.gov/env/wpp/permits/issued/R004000.pdf
State and Municipal Storm Water Regulations	New Jersey	Stormwater Rules (N.J.A.C. Chapter 7:8)	2004	
State and Municipal Storm Water Regulations	New Jersey	Annual Groundwater Recharge Analysis	09/01/03	http://www.state.nj.us/dep/stormwater/tier_A/pdf/april2004public_excel2002njgrs_v2_0.xls
State and Municipal Storm Water Regulations	New Jersey	Tier A Municipal Stormwater NPDES Master General Permit	09/01/05	http://www.nj.gov/dep/dwq/pdf/final_tier_a_permit.pdf
State and Municipal Storm Water Regulations	New Jersey	NSPS Computations	01/31/06	http://www.state.nj.us/dep/stormwater/pdf/nsps_publicversion20060131.xls
State and Municipal Storm Water Regulations	New Jersey	NSPS User's Guide	01/06	http://www.njstormwater.org/pdf/nsps_userguide2006013.pdf
State and Municipal Storm Water Regulations	New Jersey	New Jersey Stormwater Best Management Practices Manual	02/04	http://www.state.nj.us/dep/stormwater/bmp_manual2.htm
State and Municipal Storm Water Regulations	New Jersey	Guidance for Development of Municipal Mitigation Plans	02/06	http://www.njstormwater.org/docs/munimitipplan030706.pdf
State and Municipal Storm Water Regulations	New Jersey (Zomorodi, K.)	Curve Number and Groundwater Recharge Credits for LID Facilities in NJ	2004	http://www.dewberry.com/uploadedFiles/Curve_Number_And_Groundwater_Recharge_Credits.PDF
State and Municipal Storm Water Regulations	Oregon (City of Portland)	Stormwater Management Manual	2004	http://www.portlandonline.com/bes/index.cfm?c=35122
State and Municipal Storm Water Regulations	Oregon (City of Portland)	Portland Title 33: Planning and Zoning Code, for Landscaping and Screening, and Parking and Loading	04/22/06	http://www.portlandonline.com/shared/cfm/image.cfm?id=53315
State and Municipal Storm Water Regulations	Stafford County, Virginia Board of Supervisors	Municipal Code, Chapter 21.5 Stormwater Management	12/13/05	http://www.municode.com/resources/gateway.asp?sid=i&d=11500

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